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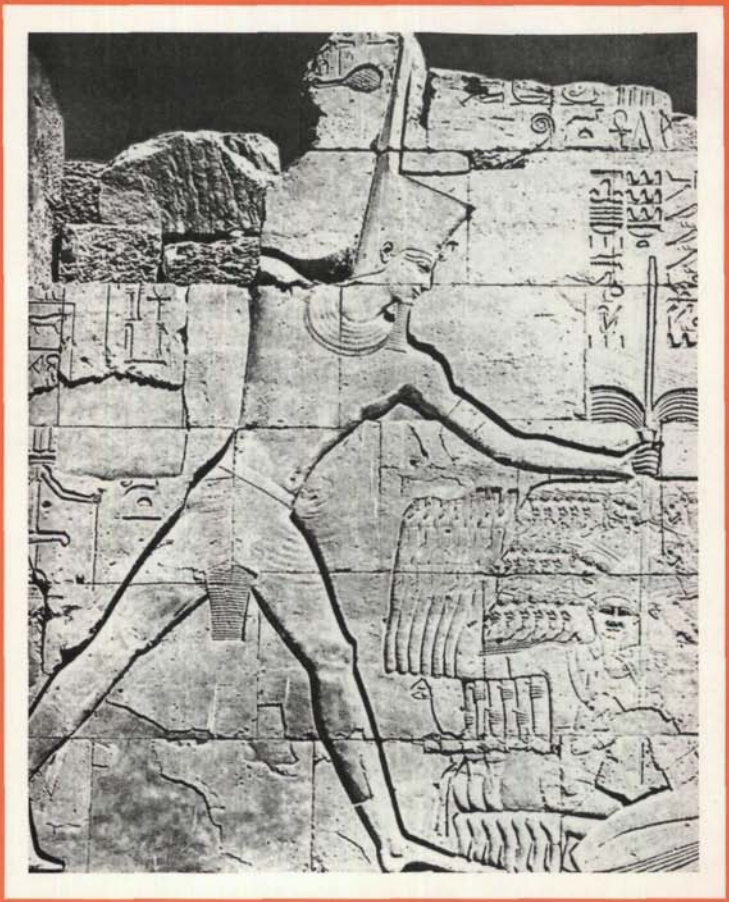

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Vol. XXXIII, No. 4 Summer 1993

CONTENTS

The Role of Cognition in Evolutionary Theory
By F. J. Irsigler 371

Freud and Jung: The Implications of Psychological Theory
By Alexander Jacob 379

The Humor Phenomenon: A Theoretical Perspective
By Michael J. Lowis and John M. Nieuwoudt 409

The Double Nature of Prejudice
By Alan McGregor 423

Planetary Periods from the Rigvedic Code
By Subhash C. Kak 433

Concerning Scientific Creativity: Herman J. Muller and Germinal Repositories
By J. W. Jamieson 443

Book Reviews 457

Index to Volume XXXIII 461

Cover Picture: Relief of Thutmosis III symbolically holding an entire army of Asiatic prisoners by the hair. (See book review of *Race in Ancient Egypt and the Old Testament*.)

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The Role of Cognition in Evolutionary Theory

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Lynn (*The Mankind Quarterly*, XXXII, 1-2, 1991: 116) argues that brain size is positively correlated with intelligence in man, and that races show consistent differences in both brain size and intelligence. Intelligence is understood as the ability to solve cognitive problems. It consists of a conscious (rational) and an unconscious (ratiomorphic) component. The first originates from education, the second from the process of phylogenetic learning (*a posteriori*) but at the same time is an expectation (*a priori*) for the ontogenetic gain of knowledge (R. Riedl et al. in *Evolution and Cognition* 2:58, 1992).

I. The Basic Relation

Evolution is based on the functional relation between ontogeny and phylogeny (Schindewolf, Gould). According to the French molecular biologist F. Jacob, the relation allows to convert a series of organizations in space into an isomorphic series of transformations in time, called "La logique du vivant" (Jacob 1970: 162, 318). In structural terms, the relation is equivalent to autonomous morphogenesis (Monod 1972:26), that is, interpenetration (L. Edinger 1909) or interdigitation (H. Braak 1980) of the phylogenetically old and the new cortices, the allocortex (sensu lato) and the neo-or isocortex. In functional terms, the basic relation refers to the conflict between organism and environment in which the organism "always calls the tune (Jacob: 185). This is due to a cognitive state known as "conscious" or "the conscious self". It is innate in each species (Sperry 1983: 95) and at the base of the autonomy or self-determination characterizing the living belongs in their behavior (Monod: 79). The latter is related to a specific kind of information from the outside world but does not depend on changes in the environment. This information is called "semantic" (Brillouin) or "teleonomic" (Monod). Professor M. Eigen,

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the Nobel laureate from the Max-Planck-Institütfur biophysikalische Chemie in Göttingen, calls it "Information of selective value with respect to reproduction" (Eigen 1971:517). It provides the "perceived meaning" (Stent) of signs and symbols, also called "the emotional truth" (Cattell). Both are species-typical raising the question how the new evolutionary types or "morphs" originate.

II. Evolution by Law

New species, or subspecific types arise by heteromorph speciation. This means sudden events called "heterochronic", occurring during individual ontogenies and disrupting Haekel's repetition of phylogeny in ontogeny. This is the tenet of the emerging school holding "Evolution by Law" or "Nomogenesis" from the Greek *nomos* = law (L. Berg 1922/1969, J.C. Willis 1940, C.P. Groves 1989). Heterochronic "jumps" are explained by G.R. de Beer who states in his "Embryology and Evolution" (1930:108): "New characters apply at all stages of ontogeny, and by heterochony they may be retarded or accelerated, so as to appear later or earlier in subsequent ontogenies". This makes phylogeny a function of ontogeny (A.N. Sewertzoff 1931: 365) and leads to evolutionary progress by phylogenetical branching or cladogenesis (B. Rensch 1971: 122). It is exemplified by the split in the hominid lineage during the Late Pliocene (Tobias 1985:135) and the sudden transposition at the time of emergence of the modern and Neanderthal grade (Groves: 60 ff, 304, 317).

Retarded ontogeny results in retention of ancestral "juvenile characters", formerly called foetalization, now known as "paedo-morphosis/neoteny".

It is the retention of their juvenile bodily traits into adulthood which makes the South African Kalahari Bushmen or San people a distinct ethnic or racial entity (Tobias 1978: 5). The ancestors of the San, living in richly endowed areas, looked exactly like the present-day desert dwellers. This shows that their paedomorphic traits are not, as formerly thought, an effect of adaptation to the arid environment. The nomogenetic school considers adaptation to be a conservative rather than progressive factor in evolution. It holds that our species is geologically young and demic (stenotopic) right from the start.

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III. Space-time (Dissipative) Structures

Professor I. Prigogine, of the Free University in Brusselles, has developed a thermo-dynamical theory of evolution which he calls a "Dialogue with Nature". The theory rests on two premises developed in Prigogine's Nobel Lecture in Chemistry (1977). (1) The thermodynamical a state "far from equilibrium" which characterizes the living beings, leads, through a series of instability, to a new "order through fluctuations".(2) From the instabilites result, through exchange of matter and energy (information) with the outside world, in space-time structures, called "dissipative" (Prigogine 1977: 2.1, 4.5). The exchange is both necessary and irreversible. Dissipativity thus requires the isomorphism of the basic relation (Section I) to be replaced by heteromorphism leading to heteromorph speciation (Section II). The fluctuations play a decisive role in the evolutionary progress. They amplify some initially small variations into behavior related to the specific "Umwelt" to which the living beings belong. This leads Prigogine to the concept of multiple times (Prigogine et Stengers: 13, 431). The group-specific time is represented in the new "time evolution operator" with its "eigen values". It expresses the condition of dissipativity as a (Lyapounof) function > O (Progogine 1977: 7.6) Dissapativity breaks the time-symmetry of the "Classics" and results, through successive bifurcations, to phylogeneticalbranching (cladogenesis).

There were earlier attempts to conceive homogenization in terms of a series of deviation-amplifying processes. Professor P. V. Tobias, University of the Witwatersrand, Johannesburg, refers in his James Arthur lecture on the Evolution of the Human Brain (1969) to Maruyama (1963) and to Holloway (1967) arguing that an initial "kick or push", such as tool-using in Late Pliocene pongids, may have set in motion a positive feedback" resulting in a cladogenetic split (Tobias 1971: 144 ff).

The crucial point is the autonomy of the heterochronic (space-time) transformations in which fluctuations, structure, and function are reciprocally interrelated Prigogine 1977: 4.5).

Dissipative structures mediating the contact between organism and the outside world, are present in animals ranging from reptiles to man. They are called "the reptilian-type and palaeo-mammalian-typebrains" (Maclean 1978: 42). They comprise

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the olfacto-striate complex and satellite grisea, the so-called "periventricular brain" involved in hormonal feedback regulation (Nieuwenhuys 1985: 179 ff), Laborit's "information circulante". It coincides largely, but not entirely, with the limbic or palaeo-mammalian system which undergoes, in the ascending primates, a definite progression in size and differentiation culminating in man (Stephan and Andy 1970, Stephan 1975). The interdigitation between the phylogenetically old and the new cortices (Section I) results from the migratory processes (Schepers 1948: 167) characterizing the early stages of cortex evolution in mammals, that is hemispheric rotation around the lateral (sylvian) fossa, and infolding of the allocortex forming a zone of transition where allocortical and isocortical layers are intimately indented (Braak: 38).

If the connecting pathways between the reptilian and palaeo-mammalian formations are destroyed in monkeys, the species-typical, simian behavior disappears. Interpreting these experimental findings in the light of clinical evidence one might say that these structures "provide the avenues to the basic personality" (Maclean:49).

Clinical evidence is available. In the type of presenile dementia first described by A. Pick in 1898 and bearing his name, "the avenues or connecting regions of the olfactory with the limbic system" are the initial and selective targets of the cortical atrophy in the early stages of Pick's disease. It eventually destroys the human character and conduct ("Kern des Menschseins"). This and the fatal outcome are due to the progressive destruction of the orbito-frontotemporal cortices (Spatz' "basale Rinde") including the allocortical regio entorhinalis and Brodmann's "insula ventralis or olfactoria" (Stephan 1975, Irsigler 1989). (Spatz 1937, 1955, 1965, Lüers and Spatz 1957, Kahle 1969, Jacob 1979).

Summarizing. problems arising from space-time contact between organism and environment require structures not related to cognition, but controlled by emotions or "drives". These are components of the "conscious self" ranging from animal consciousness to the self-conscious mind of the human species (Popper and Eccles). The "affective unconscious and the cognitive unconscious" of the Piagetian school (1976) is innate in each species and

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develops onto- and phylo- genetically at different rates, that is, by heterochronic cytogenesis and mylogenesis (Spatz and coworkers). It follows that the Prigoginean "space-time structures" must include al, cortex sensu lato, represented in mammals by the "periventricular or reptilian-palaeo-mammalian"(cholinergic) brains (MacLean, Niewenhuys). It is thus the subcortex and its connecting path with "basal neocortex" the subcortex and its connecting school, not the surface "association" areas which are at the base of the "distributed" cerebral functioning (Pribram). In other words: the correlation between brain size and function (including intelligence) is one of structural (allo-isocortical) interpenetration and functional reciprocity, not one of sheer quantity in the sense of Jacob's "isomorphism". The determining factor in both phylogeny and ontogeny is group specificity. In man, this means innate individuality "that effectively rules out environment, experience, or known theory of child development or nurturance" (Sperry 1983: 56).

The heterochronic "jumps" (Phasensprünge, Eigen 1988) characterizing the living beings are related to species-typical information with respect to reproduction. These sudden events replace the time parameter of causation with the quasi-timeless parameter of implication (Hörmann, Lestienne) or inductive reasoning (Induktion, Riedl 1980). Heteromorph speciation defines the participation of the species in their own evolution.

Conclusion

In man, brain size is determined by the mass of the neocortex. This has led to the idea that the higher cortical functions, including consciousness, are neocortical in origin and character, resulting from the cognitive evolution starting "from scratch" after the break-up of instinct (Piaget 1976). However, consciousness, or the conscious self, is innate in each species, amounting in man to "innate individuality" (Sperry 1983). It is a function of a basic relation (A.N. Whitehead 1949), that is, of the group-specific space-time converting "dissipative" structures present in the brain since the Jurassic mammalian-like reptiles including man. Both the conscious and the unconscious components of cognition are related to the "Umwelt" to which living beings belong, (this is K. Lorenz' "evolutionary epistemology" qualified by I. Prigogine's "irreversible thermodynamics"). It is the species-typical autonomy characterizing

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the cognitive (intellectual and emotional dimensions of the human personality) that is responsible for the individual and group differences to which Lynn refers between the sexes and the races.

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Freud and Jung: The Social Implications of Psychological Theory

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The purpose of this paper is to identify the philosophical difference between the two most influential psychological systems of the modern age, those of Freud and Jung, in order that we may better appreciate their differing social implications. This is significant in so far as the Freudian psychoanalytical movement is essentially rooted in ancient beliefs capable of being traced back through the Cabala even to distant Babylonian traditions,[1] whereas Jungian thought is rooted in a more distinctly Western tradition.[2]

It may be stated at the outset that, as has been well recognized, Freud's psychological concepts were deeply rooted in ancient Middle Eastern traditions through his deep understanding of the great wealth of the Jewish cultural heritage. Yet we may also perceive in some of his writing a deliberate attempt to find alternatives to the major philosophical principles of the European civilization which surrounded him, yet regarded him as alien. In *The Interpretation of Dreams*, for instance, Freud admitted that he saw himself as a modern Hannibal who would take vengeance on Rome, which symbolized European culture in general and the Catholic Church in particular.[3] That he should have succeeded to a great extent in his undertaking is part of the dilemma of the modern West.

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[1] See *Sigmund Freud and the Jewish Mystical Tradition*, David Bakan, Beacon Press, Boston, 1975.

[2] I must stress that my intention is not to evaluate the scientific achievements of Freud and Jung in their entirety but only to highlight those aspects of their systems which have a significant bearing on questions of social philosophy.

[3] *The Interpretation of Dreams* (1900), in *The Standard Edition of the complete psychological works of Sigmund Freud* (henceforth referred to as *SE*), IV, p.196f.

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Marthe Robert, in her book on Freud's sense of his own identity, *From Oedipus to Moses*,[4] has revealed the conflict between the ethnic roots of the psychologist and the classical foundations of the European society in which he lived. We may recall here that the Jews were emancipated only in 1867 in Austria and two years later in the North German Confederation, and Freud must therefore have been very conscious of being an "outsider" in gentile Viennese society. The acceptance of the Jewish people into Central European society was slow and marked by suspicion and strife between the two communities. Thus, as Jacques Maritain has pointed out: "at the bottom of Freudian metaphysics there is – the resentment, Freud himself has explained, of a soul insulted and humiliated since childhood, a resentment, as it seems, against human nature itself."[5] In many ways Jewish scholars were more free to see gentile European clearly, free from the sense of involvement that might cloud the minds of gentile scholars. On the other hand, they must also have had problems in comprehending just how the Europeans themselves felt about the social behavior they observed. In a sense they were in the same position as Europeans studying African and Asian societies. From the outside some things seemed familiar, but those same things could not be understood easily when one was not brought up with them from childhood. It is not surprising, therefore, that Freud told his fellow members in a talk before the B'nai B'rith that: "Because I was a Jew I found myself free from many prejudices which restricted others in the use of their intellect; and as a Jew I was prepared to join the Opposition and to do without agreement with the 'compact majority'".[6] Freud's persistent representation of civilized society to man's sexual instincts may therefore have been more than simply a product of a purely materialistic psychology, it may indeed have been, as Robert called it, a conscious attempt to turn "the world upside down by revealing the impure source of all the creations of the spirit".[7]

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[4] Marthe Robert, *From Oedipus to Moses*, Garden City, N.Y.: Anchor Books, 1976.

[5] Jacques Maritain, "Freudianism and Psychoanalysis: a Thomist view", *Freud and the 20th Century*, ed. B. Nelson, Cleveland: Meridian Books, 1963, p.253.

[6] Marthe Robert, *op.cit.*, p.4.

[7] p.55.

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The chief assumption of Freudian psychology is that all the effects of so-called culture and civilization are social manifestations of infantile instincts which, first and last, retain their primitive character as sexual and aggressive. This limited view of human nature and its spiritual products is due to Freud's inadequate scheme of the psyche as being constituted of three main elements, the id, the ego, and the super-ego. There is no clear demarcation between the id (or libido), and the ego, or rational intellect, since the unconscious, instinctual drives of the id are present with the ego throughout its development and characterize it strongly even in its highest, "civilized" state. As for the so-called super-ego, this is not really an integral part of the self, but a product of the interaction between the individual self and the societal psyche which serves as an admonitory agent, or "conscience", to the ego. Indeed, Freud maintains that conscience is derived from the earliest childhood experiences of a person, so that the superego is the parental image internalized. Conscience is actually a form of aggressiveness which, strangely enough, "does not so much – represent the severity which one has experienced from [the parent] or which one attributes to [him]; it represents rather one's own aggressiveness towards it".[8] It is true that Freud admitted "archaic vestiges" in the superego, and so he came close to admitting that the unconscious cannot really be entirely dependent on its conscious interaction with external reality, as Jung was later to establish.[9] But the general attribution of the moral faculty to familial circumstance and society in Freud's system, rather than to the individual psyche itself is a distortion of idealistic philosophy which is typical of a rational-materialistic philosophical trend which embraced both Spinoza and Marx. We shall see later how Jung corrected this inadequate view of conscience through his system of archetypes. Indeed, the major defect of the Freudian psychology, as Reinhold Niebuhr has admirably shown, is that "[S]ince Freud's system is a consistently naturalistic one, it can not, despite the

[8] *Civilization and its Discontents* (1930), in *SE*, XXI, p.129..

[9] See C.G. Jung, "A psychological view of conscience' in *Collected Works*, Vol.X, p.440: "first, the unconscious is, ontogenetically and phylogenetically, older than consciousness, and secondly, it is a well-known fact that it can hardly be influenced, if at all, by the conscious will."

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subtleties of its analyses of the intricacies of human selfhood, do full justice to the transcendent freedom of spirit of which the self is capable and it cannot survey the creative and destructive possibilities of that freedom".[10] Niebuhr insists that the self is always more than mere reason: "No doubt the self uses all of its rational faculties as instruments of this freedom. The freedom is however more than the capacity for discursive reason and the creative capacities of this freedom do not prevent it from being used destructively or egoistically".[11]

Freud's view of the development of human civilization is akin to Hobbes's since it repeats the Hobbesian thesis of the state of nature as being one of strenuous efforts to satisfy physiological hunger and appease the mutual physical strife between individuals. However, unlike Hobbes, Freud does not envisage a Leviathan as a political solution to the problem of human nature,[12] but, more like Spinoza, believes that rational understanding will usher in a well-balanced society of men who will reconcile their ego with their id and be freed of the adult illusions of civilization derived from their diverse infantile complexes.[13] It is true that Freud also concedes love (i.e. the life-instinct), or Eros, a role in the gregarious formation of early societies,[14] but in an ambiguous a way that it is strongly allied to envy. Thus the root of gregariousness itself is located in the envious feelings that a child feels with regard to his parent's attentions to his brothers and sisters.[15] According to Freud, this envy is satisfied vicariously through the identification of the desires of each individual in a group with the desires of others in it.

Indeed, in *The Interpretation of Dreams*, Freud even proposes a mythic model of the formation of early society borrowed from the Oedipus story according to which the fate of all civilization derives from an Oedipal envy of a primal father figure and an incestuous

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[10] R. Niebuhr, "Human creativity and self-concern in Freud's though", in *Freud and the 20th century*, p.269.

[11] *Ibid.*

[12] Cf. p.30 below.

[13] See *The Future of an Illusion* (1927), in *SE*, XXI.

[14] See *Group Psychology and the Analysis of the Ego* (1921) Ch.IV, in *SE*, XVIII, p.92, and *Beyond the Pleasure Principle*, in *SE*, XVIII, p.50.

[15] *Group Psychology*, Ch.IX, 'The Herd Instinct', in *SE*, XVIII, p.120f.

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desire for a primal mother figure. But anyone who is not deceived by the charm of novel mythological theories can see that the Oedipal complex is by no means a universal phenomenon and, even if it were, it clearly could not have been the chief impetus to the lofty creations of the spirit which are the hallmark of high civilization. Certainly, there is no indication in Sophocles's plays themselves that any of the events relating to one specific royal family of Thebes are supposed to represent the birth of either Greek or human civilization, as, for instance, the overtly mythic story of Prometheus is supposed to do.[16] Indeed, it has been argued that Freud's conception of the drama of early society could probably be a projection onto humanity of his own psychological complexes. In maintaining that all early societies were formed when the sons of a certain patriarch collectively killed and devoured their father since he represented an obstacle to their craving for power,[17] Freud was partly rationalizing and universalizing his own unhappy experiences with his Chasidic father, Jakob Freud, who represented the Jewishness from which the psychologist sought unconsciously to free himself. This hypothesis is reinforced in his essay on 'Moses and Monotheism' (1939), in which he describes the killing of Moses[18] by the Jews who followed him: Moses is the father of the Jewish religious ethos from which the Jews attempted in vain to free themselves, since the Yahwist religion which succeeded the Mosaic system gradually acquired the characteristics of the latter.

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[16]Freud points to the passage in *Oedipus Rex* where Jocasta comforts the tragic hero by reminding him that his crime is perhaps not so unnatural as he must think since it often occurs in the dreams of men (*The Interpretation of Dreams* in *SE*, IV, p.264). But the very fact that Sophocles is aware of this dream-wish and yet does not make it the moral basis of his drama reveals that for him the fear of the gods represented by the chorus is much more significant for the health of the nation than the unconscious indulgence of repressed desires. The emphasis on the latter that Freud provides in his system is totally un-European and typically modern.

[17] *Totem and Taboo* (1913), in *SE*, XIII, p.141f.

[18] Moses is depicted by Freud as an Egyptian prince, when the biblical story of Moses makes complete psychological sense only if the central figure were a Jew expelled from Egypt for his revolutionary religious invention, just as Abraham earlier was expelled from Chaldea for his inability to adapt to the philosophical constitution of the Chaldeans (see Josephus the Jew, *Jewish Antiquities*, I, 157; cf. Philo the Jew, *De mutatione nominum*, 72-76, and *De migratione Abrahami*, 184).

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However we see this, according to Freudian theory all civilization was rooted in unpleasant origins and developed over time into a system which imposed an ever greater control on the primal instincts, aided by super-egoistic activity. Thus, in this view, religion, philosophy, and art, the columns of higher human civilization, are all equally "illusions" of instinctual life that have been sublimated. Religion is but a product of the child's need of a protecting father:

> Religion is an attempt to master the sensory world in which we are situated by means of the wishful world which we have developed within us as a result of biological and psychological necessities. But religion cannot achieve this. Its doctrines bear the imprint of the times in which they arose, the ignorant times of the childhood of humanity. Its consolations deserve no trust ... If we attempt to assign the place of religion in the evolution of mankind, it appears as a permanent acquisition but as a counterpart to the neurosis which individual civilized men have to go through in their passage from childhood to maturity.[19]

Religious teachings are, as it were, "neurotic relics" and Freud suggests that "the time has probably come for replacing the effects of repression by the results of the rational operation of the intellect".[20] Art and philosophy, too, are akin to neuroses. In fact:

> It might be maintained that a case of hysteria is a caricature of a work of art, that an obsessional neurosis is a caricature of a religion, and that a paranoiac delusion is a caricature of a philosophical system.[21]

That is, they differ from one another only in degrees of intensity and not in kind. The illusory character of philosophy is highlighted by Freud in the following manner:

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[19] *New Introductory Lectures on Psycho-Analysis* (1933), Lecture XXXV in *SE*, XXII:168.
[20] *Ibid.*
[21] *Totem and Taboo*, II, in *SE*, XIII, p. 73; cf. 'Preface to Reik's Ritual: Psycho-analytic studies' (1919) in *SE*, XVII:261.

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> Philosophy is not opposed to science, it behaves like a science and works in part by the same methods; it departs from it, however, by clinging to the illusion of being able to present a picture of the universe which is without gaps and is coherent, though one which is bound to collapse with every fresh advance in our knowledge. It goes astray in its method by over-estimating the epistemological value of our logical operations and by accepting other sources of knowledge such as intuition.[22]

Art is a more harmless product of the transference of instinctual activity to the imagination since it does not pretend to be anything but an illusion.[23]

According to Freud, the unfortunate aspect of the repression of the instincts which constitutes human culture is that it causes the individual to suffer an increasing malaise within the confines of civilized life and produces the various psychic disorders which Freud himself and his followers took it upon themselves to cure. One of the obvious results of civilization, according to Freud, is that "The sexual life of civilized man is ... severely impaired; it sometimes gives the impression of being in the process of involution as a function, just as our teeth and our hair seem to be as organs".[24] As for the instinct of aggression, Freud maintains that civilized men seek outlets for this instinct through the forcible creation of nations and wars between these nations. Moreover, by the time Freud wrote *Beyond the Pleasure Principle* (1920), the experience of the Great War had prompted him to identify, in addition to instinct of self-preservation or 'life-instinct' (related to the libido), a 'death-instinct' characteristic of the human ego and inbuilt in the entire social system which the ego creates.[25] This death-instinct is indeed capable of bringing about the ultimate extinction of all mankind.[26]

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[22] *New Introductory Lectures* in *SE*, XXII:160f; see Jung's crucial evaluation of intuition in the Germanic peoples.

[23] *Ibid.*

[24] *Civilization and its Discontents*, in *SE*, XXI, p.105.

[25] See *Beyond the Pleasure Principle* (1920), in *SE*, XVIII.

[26] See 'Why War'(1933) in *SE*, XXII, p.211.

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In this dark theory of the state, Freud shows himself to be a strict psychological determinist with little understanding of the full scope of the human spirit which is characterized by a creative force of will and independent of both the Eros and Ananke identified by Freud as the motive powers of civilization. The alarming defect of Freud's psychological system therefore is that it is, as Maritain puts it, "pervaded and overwhelmed on every side ... by a pseudometaphysics of the most vulgar character ... because it combines all the prejudices of deterministic, mechanistic scientism with all the prejudices of irrationalism".[27] Indeed, in this narrowly deterministic mode of thought, Freud's theories parralel the limited economic conception of man postulated by that other major nineteenth century Jewish thinker, Karl Marx, and for such reasons as these some have maintained that there is a tendency in the Jewish psyche to limit itself to empirical-rationalistic materialism.[28] According to Freud's psychological innovations, man is a

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[27] Maritain, in *op.cit.*, p.249.

[28] It has been suggested that the philosophical outlook of the Semitic peoples is closely related to their "imperfectly" inflected speech and their lack of mythological imagination. The importance of a fully developed language for philosophical speculation was argued by nineteenth century linguists such as Wilhelm von Humboldt (1767-1835) and Ernest Renan (1823-1892). Humboldt, for instance, in the published introduction (*Einleitung über die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluß auf die geistige Entwicklung des Menschengeschlechts*) to his projected work *Über die Kawisprache auf der Insel Java*, declared that

> It is self-evident that a language whose structure is most extensively suited to the intellect and which most intensively stimulates its activity must also possess the most enduring power to produce from its reservoir of linguistic materials new conformations, brought forth by the lapse of time and the destinies of peoples --- if the Sanskritic tongues have for at least three millennia given proof of their productive capacity, this is simply an effect of the intensity of the creative linguistic action in the peoples to which they belonged" (Wilhelm von Humboldt, *Linguistic Variablity and Intellectual Development*, tr. George C. Buck and Frithjof A. Raven, Coral Gables, Florida: Univ. of Miami Press, 1971, p.162)

Humboldt actually argued that the Semitic languages were "deficient":

> In contrast, it seems more certain to me than what has been discussed to this point, and more important for determination of the relationship of the Semitic languages to intellectual development, that the intimate linguistic sense in the case of these peoples was still lacking the necessary acuteness and clarity with respect to the material meaning and to the relationship of words ... Inflected words in the Semitic languages do not contain inflectional modifications of original tones; rather they contain complementations that produce the true phonetic form. Now, since the original root morpheme cannot become, in addition to the inflected one, perceptible to the ear in connected speech, the animate distinction between semantic and relational expression suffers.

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prisoner of his lower unconscious and therefore deprived of a capacity for ethical behavior. As Gérard Bonnot puts it:

> On a confondu le diable et le bon Dieu, le bien et le mal, l'humain et l'inhumain dans le même déterminisme psychologique ... Libérateur equivoque, Freud nous interdit d'élaborer de nouvelles valeurs morals en nous privant du seul attribut qui puisse les fonder: notre liberté. Il nous livre à la dictature d'une nécessité qui, pour être inconsciente, n'apparaît pas moins implacable que les lois de la physique.[29]

What is worse is that the "cure" that Freud and his followers propose to this pathetic state of affairs is, explicitly or implicitly, a rational liberation of the libido. For, if civilization is a cause of psychic disorders, then the only way to remedy these personal defects is to undo the repressions of the societal super-ego. Such an aim is clearly more congenial to animals than to men, since it is easier for the former to live in agreement with their instincts than it is for us. Indeed, the logical result of Freud's doctrine is that man as a natural being must be considered a "freak", as he, not surprisingly, is in the left-Freudian Erich Fromm:

> Self-awareness, reason and imagination disrupt the

Renan, a Semitic scholar, also saw the difference between the Indo-European and the Semitic languages as being one between organic and inorganic forms. Thus he declared,

> On peut dire que les langues ariennes, comparées aux langues sémitiques, sont les langues de l'abstraction et de la métaphysique, comparées à celles du réalisme et de la sensualité. Avec leur souplesse merveilleuse, leurs flexions variées, leurs particules délicates, leurs mots composés, et surtout grâce à l'admirable secret de l'inversion, qui permet de conserver l'ordre naturel des idées sans nuire à la détermination des rapports grammaticaux, les langues ariennes nous transportent tout d'abord en plein idéalisme, et nous feraient envisager la création de la parole comme un fait essentiellement transcendental. Si l'on ne considérait, au contraire, que les langues sémitiques, on pourrait croire que la sensation présida seule aux premiers actes de la pensée humaine et que le langage ne fut d'abord qu'une sorte de reflet du monde extérieur (*Histoire générale et système comparé des langues sémitiques*, Paris: Michel Lévy Frères, 1878, Bk.I, Ch.I, p.22).

Thus, the Semitic consciousness was perceived by these writers as being rigid and narrowly focussed: "L'abstraction leur est inconnue; la métaphysique impossible" (*Ibid.*).

[29] G. Bonnot, *Ils ont tué Descartes: Einstein, Freud, Pavlov*, Paris: Editions Denoël, 1969.

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> "harmony" which characterizes animal existence. Their emergence has made man into an anomaly, into the freak of the universe.[30]

The link between the Freudian view of man and the chaos of modernism, marked by what A.H. Williamson calls its "anti-historical orientation, its insistence upon discontinuities, its focus upon the fragmented, its moral ambiguities" and its attempt "to discount national experience, delegitimize patriotism, dissolve social ties, reject dominant philosophic and religious truths"[31] is as obvious as it is, in the highest degree, deplorable.[32] The pervasive influence of Freudian thought on the western, especially American, mind cannot be doubted.[33] As H.M. Ruitenbeck put it, "In the structure of the American unconscious, psychoanalysis has, for some people, replaced earlier ideologies, and even certain religious consolations".[34] The penetration of the social fabric by the Freudian psychology is readily evident in the widespread use of psychoanalytic terminology in daily parlance, especially terms such as "guilt feelings, personal insecurity, unstructured personality, instability, "internalization"... frustration, aggressive tendencies, trauma, and the all-inclusive ... 'tensions'", with a concomitant absence of such positive terms as "personal integrity, self-reliance, responsibility, or ... 'moral courage'", as Richard LaPiere has

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[30] E. Fromm, *The Sane Society*, N.Y.: Holt, Rinehart and Winston, 1955, p.23.

[31] A.H. Williamson, "The cultural foundations of racial religion and anti-semitism",in *Lingering Shadows: Jungians, Freudians, and Anti-Semitism*, ed. A. Maidenbaum, S.A. Martin, Boston: Shambala Press, 1991, p.151.

[32] See also Jung, 'In Memory of Sigmund Freud' (1939) in *CW*, XV:47: Freud's psychological method is and always was a cauterizing agent for diseased and degenerate material, such as if found chiefly in neurotic patients --- Later when the new ideas met with ample recognition, this grew into an aesthetic defect, and finally, like every fanatacism, evoked the suspicion of an inner uncertainty".

[33] For the development of Freudian psychology in Europe, see H. Ellenberger, *The Discovery of the Unconscious: The history and evolution of dynamic psychiatry*, London: Penguin Press, 1970; for its influence in America, see H.M. Ruitenbeck, *Freud and America*, N.Y.: Macmillan Co., 1966.

[34] H.M. Ruitenbeck, *op.cit.*, p.24.

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pointed out.[35] The encouragement of self-expression on the psychoanalyst's couch is linked in no uncertain way to the vulgar, and often violent, freedom of expression - physical as well as vocal - which characterizes modern society in general and is the glaring opposite of the restraint typical of social conduct in a genuine civilization. As for the various revolts, primarily in America, in the sixties, against the so-called "establishment", and the increasing racial and sexual permissiveness that they have led to, these may indeed be considered the final triumph of a man who revealed his scientific intentions in the Virgilian epigraph to his most famous work, *The Interpretation of Dreams*: 'Flectere si nequeo superos, Acheronta movebo'.[36]

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The defects of Freud's psychology are best highlighted by juxtaposing it to a study of the discussions of the psyche and its role in society contained in the writings of the German-Swiss psychologist Carl Gustav Jung (1875-1961). Jung clearly realized that psychoanalysis is:

> ... the psychology of neurotic states of mind, definitely one-sided, and its validity is confined to those states ... it is not a psychology of the healthy mind, and ... this is a symptom of its morbidity ... it is based on an uncriticized, even an unconscious, view of the world which is apt to narrow the horizon of experience and limit one's

[35]Richard LaPiere, *The Freudian Ethic*, N.Y.: Duell, Sloan and Pearce, 1959, p.64; see also H.J. Eysenck, *The Decline and Fall of the Freudian Empire*, Scott Townsend Publishers, Washington D.C. 1991, 202ff: "Psychonalysis is at best a premature crystallization of spurious orthodoxies; at worst, a pseudo-scientific doctrine that has done untold harm to psychology and psychiatry alike --- The time has come to treat it as a historical curiosity, and to turn to the great task of building up a truly scientific psychology" (p.208).

[36] This line from the *Aeneid*, VII, 312, "If I cannot bend the higher powers, I will move the infernal regions", used to represent the operation of repressed instinctual impulses, may well serve as the motto of Freud's entire intellectual production.

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vision.[37]

Unlike the limited, rational materialistic conception of the ego and the id propounded by Freud, which is rather a physiological unconscious or subconscious,[38] Jung's Psyche or the objective Unconscious is a metaphysical sphere of universal life or energy that ranges between spirit and matter:

> Just as, in the lower reaches, the psyche loses itself in the organic material substrate, so in its upper reaches it resolves itself into a "spiritual" form about which we know as little as we do about the functional basis of instincts. What I would call the psyche proper extends to all functions which can be brought under the influence of a will.[39]

Indeed, Jung, rather like the philosopher Schopenhauer, considers matter and soul, or Will, as two aspects of a single primal reality:[40]

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[37] 'Freud and Jung: Contrasts' (1929), in *Collected Works*, London: Routledge and Kegan Paul, 1957-21, (henceforth referred to as *CW*) IV:335.

[38] A transcendental realm of the spirit was alien to the thought of Freud. As L. Frey-Rohn puts it: "[Freud] erkannte ein An-Sich, es war aber --- ausschließlich ein *An-Sich des Triebes, ja des Stoffes* (Leblosen!). Ein geistiges An-Sich ein transzendentaler Sinn war ihm fremd. Hinter der psychischen Wirklichkeit stand in letzter Linie der *Körper mit seinen Anforderungen* --- Wann immer der Ausdruck "Geist" vorkam, war es in der Bedeutung von Seele, von geistigen Interessen oder auch von "*ruach*" (Windhauch). In jedem Fall wies der Geist auf einen Gegenpol zur Sinnlichkeit bzw. auf etwas "mit dem Gesicht Wahrgenommenes hin", Liliane Frey-Rohn, *Von Freud zu Jung*, Zürich: Rascher, 1969, pp.391,393.

[39] 'On the Nature of the Psyche' ("Theoretische Überlegungen über das Wesen des Psychischen", 1954) in *CW*, VIII: 183. cf., also, 'The Psychology of the Child Archetype' ('Zur Psychologie des Kind-Archetypus', 1940), iii, 2, in *CW*, IX, i:173: "The deeper 'layers' of the Psyche lose their individual uniqueness as they retreat farther and farther into darkness. Lower down, that is to say, as they approach the autonomous functional systems, they become increasingly collective, until they are universalized and extinguished in the body's materiality, i.e., in chemical substances. The body's carbon is simply carbon. Hence 'at bottom' the psyche is simply 'world'."

[40] We may remember that matter is characterized in the system of Schopenhauer as the visibility of the Will, while Soul or Psyche itself is the Will as ideal Nature, that is, the Will with a tendency to manifest itself through matter. But above the Will as ideal Nature is the Will as the ineffable Self. See below p.17, and A. Jacob, "From the World-

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> Since psyche and matter are contained in one and the same world, and moreover are in continuous contrast with one another and ultimately rest on irrepresentable, transcendental factors, it is not only possible but fairly probable, even, that psyche and matter are two different aspects of one and the same thing.[41]

The ultimate nature of both matter and spirit is "transcendental, that is, irrepresentable". And "the only reality which is given to us *without a medium*" is the psyche and its contents. The psyche is a kind of non-physical space in which energy operates, and energy is cosmic as well as human. The human psyche, according to Jung, has three layers, consciousness, the personal unconscious, and the objective or collective unconscious. It is the last that constitutes one radical difference between Jung's psychology and that of Freud. For the collective unconscious is that level of the psyche that is prior to and larger than the individual personal experience. It is not merely psychic but, first, spiritual and transcendental. The nature of this transcendental reality cannot be determined with our limited reason:

> That the world inside and outside ourselves rests on a transcendental background is as certain as our own existence, but it is equally certain that the direct perception of the archetypal world inside us is just as doubtfully correct as that of the physical world outside us.[42]

The reason why it eludes objective definition is that it is intimately connected to the observing subject:

Soul to the Will: The natural philosophy of Schelling, Eschenmayer, and Schopenhauer", *Schopenhauer Jahrbuch*, 1992, 19-36, rpt. in A. Jacob, *De Naturae Natura*, Stuttgart: Franz Steiner, 1992, Chs. IX and X.

[41] 'On the Nature of the Psyche' in *CW*, VIII:215.

[42] Jung, *Mysterium Coniunctionis* (1955-56), VI, Art. 10 in *CW*, XIV:551. See also 'On the Nature of the Psyche' in *CW*, VIII:228: "We are fully aware that we have no more knowledge of the various states and processes of the Unconscious as such than the physicist has of the processes underlying physical phenomena. Of what lies beyond the phenomenal world we can have absolutely no idea, for there is no idea that could have any other source than the phenomenal world."

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> Hence the reality underlying the unconscious effects includes the observing subject and is therefore constituted in a way that we cannot conceive. It is, at one and the same time, absolute subjectivity and universal truth, for in principle it can be shown to be present everywhere, which certainly cannot be said of conscious contents of a personalistic nature.[43]

It is, therefore, not merely unconscious as psychic energy, but originally the higher consciousness, or "absolutes Wissen", of the Self:

> If we are to do justice to the essence of the thing we call spirit, we should really speak of a "higher" consciousness rather than of the unconscious, because the concept of spirit is such that we are bound to connect it with the idea of superiority over the ego-consciousness.[44]

This spirit is "above" the intellect:

> Spirit is something higher than intellect since it embraces the latter and includes the feelings as well. It is a guiding principle of life that strives towards the superhuman, shining heights.[45]

This distinction between ego consciousness and higher consciousness is completely absent in the psychological system of Freud.

The Psyche, which alone is immediately accessible to us, thus encompasses not only the lower 'id' of Freud, but also the collective

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[43] "On the Nature of the Psyche' in *CW*, VIII:230; cf. A. Schopenhauer, *The World as Will and Representation*, Art.2: "That which knows all things and is known by none is the subject. It is accordingly the supporter of the world, the universal condition of all that appears, of all objects ... We never know it, but it precisely that which knows wherever there is knowledge" (tr. E.F.J. Payne, N.Y.: Dover Publications, 1966, I:5). See also, in this connection, A. Jacob, *op.cit.* (note 39 above).

[44] 'Spirit and Life' ('Geist und Leben', 1926) in *CW*, VIII:335.

[45] *Commentary on the Secret of the Golden Flower (Das Geheimnis der goldenen Blüte*, 1957) in *CW*, XIII:9.

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unconscious which is both "the repository of man's experience and, at the same time, the prior condition of this experience".[46] The collective unconscious consequently consists of both instincts and archetypes.[47] The latter are, as it were, the "self-portrait" of the instinct, or the "instinct's perception of itself". And again, in his essay on "Die Schizophrenie", Jung describes Archetypes as "inherited, instinctive impulses and forms that can be observed in all living creatures".[48] The difference between instinct and the archetypes is that the former is the energetic aspect of the archetypes manifest in matter:

> To the extent that the archetypes intervene in the shaping of conscious contents by regulating, modifying, and motivating them, they act like the instincts,[49]

while the archetype itself is the "Sinn des Triebs", or its specific significance. Jung is thus careful to distinguish the archetypal representations from the archetype itself, which is ultimately transcendent:

> The archetypal representations (images and ideas) mediated to us by the unconscious should not be confused with the archetypes as such. They are varied structures which all point back to one essentially "irrepresentable" basic form. The latter is characterized by certain fundamental meanings, although these can be grasped only approximately ... it seems to me probable that the real nature of the archetype is not capable of being made conscious, that it is transcendent.[50]

This transcendent, irrepresentable quality of the Archetype

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[46] *On the Psychology of the Unconscious* (*Über die Psychologie des Unbewußten*, 1943), 'The Archetypes of the Collective Unconscious', in *CW*, VII:95.

[47] "The instinct and the archetypes together form the 'collective unconscious'", 'Instinct and the unconscious' ('Instinkt und Unbewußtes', 1928), in *CW*, VIII:133.

[48] 'Schizophrenia'('Die Schizophrenie', 1958) in *CW*, III:262.

[49] 'On the Nature of the Psyche' in *CW*, VIII:205.

[50] *Ibid.*, VIII:213.

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is the same as the transcendent reality of Schopenhauer's Will, namely the Self.[51]

The archetypal images of the Psyche are generally a vital formative activity, akin to the productive imagination:

> It is difficult to see why unconscious psychic activities should not have the same faculty of producing images as those that are represented in consciousness --- the psyche consists essentially of images. It is a series of images in the truest sense, not an accidental juxtaposition or sequence, but a structure that is throughout full of meaning and purpose; it is a "picturing" of vital activities.[52]

Significantly, Jung also emphasizes the fact that the archetypes are "typical modes of apprehension",[53] thus confirming Schopenhauer's insight that the Ideas are, from the point of view of the objectivised Will or the manifest universe, indeed levels of awareness of the reality of the Will as the Self. The spirit is apt to be manifested in symbolical ways in the phenomenal realm. In *Die Psychologie der Übertragung* Jung declares that the self is:

> both ego and non-ego, subjective and objective, individual and collective. It is the "uniting symbol" which epitomizes the total union of opposites. As such and in accordance with its paradoxical nature, it can only be expressed by means of symbols. These appear in dreams and spontaneous fantasies.[54]

These empirical manifestations of the self bear the numinous quality of their original, and are thus unbounded by space or time. In *Psychologie und Alchemie*, Jung suggests that the self is apt to manifest itself in dreams "since night after night our dreams

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[51] See above p.17.

[52] 'Spirit and Life' in *CW*, VIII:325f.

[53] 'Instinct and the Unconscious' in *CW*, VIII:137.

[54] *The Psychology of the Transference* (*Die Psychologie der Übertragung*, 1946), in *CW*, XVI:264.

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practice philosophy on their own account".[55] This account of the larger archetypal significance of dreams is in stark contrast to the empirical interpretation of dreams as wish-fulfillment in Freud.

The symbolization of the Archetype of the Self or of the Absolute Unconscious is witnessed not just in individual egos but also, in its most basic and universal psychological form, in mythology. The collective Unconscious thus typically represents itself through mythological motifs. The mythological archetypes are underlying patterns of symbol formation which, according to racial and cultural inheritance, change their particular manifestations at any time or place.[56] The collective unconscious thus not only binds individuals among themselves to the race, but also unites them backwards with the peoples of the past and their psychology.[57] Although the collective unconscious as a whole is so far from human consciousness that the latter cannot really comprehend it, a basic understanding of the collective psyche behind the individual is vital for a healthy social and historical life. The importance of the unconscious as a "determining influence of history" is indeed evident throughout European history. For example,

> Only in the age of enlightenment did people discover that the gods did not really exist, but were simply projections. Thus the gods were disposed of. But the corresponding psychological function was by no means disposed of; it lapsed into the unconscious, and men were thereupon poisoned by the surplus of libido that had once been laid up in the cult of divine images ... The unconscious is prodigiously strengthened by this reflux of libido, and, through its archaic collective contents, begins to exercise a powerful influence on the conscious mind. The period of the Enlightenment closed, as we know, with the horrors of the French Revolution. And at the present time, too, we are once more experiencing this uprising of the

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[55] *Psychology and Alchemy* (*Psychologie und Alchemie*, 1952) Part II, Ch.3, in *CW*, XII:182.

[56] Jung, "Synchronizität als ein Prinzip akausaler Zusammenhänge" (1952), in *Naturerklärung und Psyche*, p.104, (*Gesammelte Werke*, VIII, p.575f).

[57] See *On the Psychology of the Unconscious* in *CW*, VII:77.

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unconscious destructive forces of the collective psyche.[58]

Since Jung is careful to differentiate the archetype of the Self[59] from the individual archetypes related to the rational ego, he can logically maintain that it is the archetypes of the ego alone which need to differentiate themselves through psychic evolution, from the primitive identification of an individual self with the world around him to the rise of self-consciousness and its consequent separation from the life of nature which is the domain of the ego. Jung disagrees with Freud's view of civilization as a result of the sublimation of instincts, which can only mean a subtle form of repression. Jung maintains, instead, that "sublimation is not the "transmutation" of instincts but the spontaneous "transfer" of energy from one instinctual form to another, from a physical instinct, for example, to its corresponding archetypal form".[60] As he put it:

> Freud's sexual theory of neurosis is grounded on a true and factual principle. But it makes the mistake of being one-sided and exclusive; also it commits the imprudence of trying to lay hold of unconfinable Eros with the crude terminology of sex. In this respect Freud is a typical representative of the materialistic epoch, whose hope it was to solve the world riddle in a test-tube.[61]

As for the so-called "Oedipus complex", Jung suggested that that may be more than a mere paternally oriented sexual complex

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[58] *Ibid.*, in *CW*, VII:92.

[59] The former is the absolute Self itself and equally the Form of God:

> Strictly speaking, the God-image does not coincide with the unconscious as such, but with a special content of it, namely the archetype of the self. It is this archetype from which we can no longer distinguish the God-image empirically ('Answer to Job' in *CW*, XI:469).

[60] W. Odajnyk, *Jung and Politics*, N.Y.: Harper and Row, 1976, p.179.

[61] *On the Psychology of the Unconscious*, in *CW*, VII:27. Jung himself describes Eros as belonging "on the one side to man's primordial animal nature which will endure as long as man has an animal body. On the other side he is related to the highest forms of the spirit. But he only thrives when spirit and instinct are in right harmony".

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and, in fact, "evidence of a notable release from the fatalities of the family situation".[62] Jung expressly denounced the Freudian concept of the super-ego, and insisted that the super-ego be properly considered as 'conscience', which is not a late result of the interaction between individual and society whereby the latter appears in the form of a patriarchal God of injunctions, but rather an autonomous archetypal constituent of the psyche. Jung argued that:

> The Freudian superego is not ... a natural and inherited part of the psyche's structure; it is rather the consciously acquired stock of traditional customs, the 'moral code' as incorporated, for instance, in the Ten Commandments. The superego is a patriarchal legacy which as such is a conscious acquisition and an equally conscious possession. If it appears to be an almost unconscious factor in Freud's writings, this is due to his practical experience, which taught him that, in a surprising number of cases, the act of conscience takes place unconsciously.

The Freudian superego, in short, is, according to Jung, "a furtive attempt to smuggle the time-honored image of Jehovah in the dress of psychological theory". Conscience is, indeed, not the same as moral precept since the former may often be in opposition to the latter. In such conflicts the proper solution is delivered by a creative instinct which springs from an active connection between the rational consciousness and the nonrational unconscious. Unlike Freud's opposition between the collective demands of society and the rebellious instincts of the individual, the judgement of the creative instinct of man in fact possesses "that compelling authority not unjustly characterized as the voice of God".[63]

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[62] Ibid.

[63] 'A psychological view of conscience' ('Das Gewissen in psychologischer Sicht' (1958), *CW*, X:455. Jung's explanation of conscience differs from Hitler's, as cited by Hermann Rauschning, "Conscience is a Jewish invention. It is a blemish, like circumcision" (H. Rauschning, *Hitler Speaks*, London, 1939, p.220). Yet Hitler was expressing the view that in pre-Judaeo-Christian Germanic society morality sprang from the desire to be loyal to the values of the group instead of from any individually internalized "conscience" that could turn the individual *against* the mores of the group.

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It should not be surprising that, with the theory of the collective unconscious, Jung points not only to the relation between the Self and the ego in the unfolding of human civilization but also to the basic psychological differences between races and to the psychological influences that occur between them. An example of the exclusivity of racial archetypes is in fact offered by the modern history of Europe. Jung considers one of the chief causes of the wars, schisms, and strife of modern Europe as being due to the anomalous position of Christianity amongst the European peoples. As he sees it, "'German Christians' are a contradiction in terms".[64] In 'Wotan' Jung explains the catastrophes of wartime Germany as due to the emergence, under stress, of the native spirit of Wotan, the ancient Germanic god of war and thunder, among the German people. The lesson to be learnt from this example is that the nationalistic awareness of a people is as essential as the self-awareness of its individual constituents: "Nationalism – disagreeable as it is – is therefore a *sine qua non*, but the individual must not remain stuck in it. On the other hand, in so far as he is a particle in the mass he must not raise himself above it either".[65]

Jung clearly insists on the need to apply different psychological categories in considering different racial groups. Thus in *The Relations between the Ego and the Unconscious*, he declared that

> it is a quite unpardonable mistake to accept the conclusions of a Jewish psychology as generally valid. ... No doubt, on an earlier and deeper level of psychic development, where it is still impossible to distinguish between an Aryan, Semitic, Hamitic, or Mongolian mentality, all human races have a common collective psyche. But with the beginning of racial differentiation essential differences are developed in the collective psyche as well".[66]

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[64] "Wotan" (1936) in *CW*, X:190.

[65] Jung to Dr. James Kirsch, May 26, 1934 in C.G. Jung, *Letters*, ed. G. Adler, A. Jaffé, R.F.C. Hull, Princeton: PUP, 1975, Vol.I, p.162. That Jung's political views were always intimately related to his psychological ones, despite his public repudiation of the Nazi regime in 1946, is demonstrated by S. Grossman in his article "C.G. Jung and National Socialism", *Journal of European Studies*, 9 (1979), 231-59.

[66] *The Relation between the Ego and the Unconscious* (*Die Beziehungen zwischen dem Ich und dem Unbewussten*), 1928), Part I, Ch.2, in *CW*, VII:149n.

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Jung criticizes Freud's mistaken application of Jewish categories "indiscriminately to Germanic and Slavic Christendom" for "Because of this the most precious secret of the Germanic peoples - their creative and intuitive depth of soul - has been explained as a morass of banal infantilism". He continues:

> [Freud] did not understand the Germanic psyche any more than did his Germanic followers. Has the formidable phenomenon of National Socialism, on which the whole world gazes with astonished eyes, taught them better? Where was that unparalleled tension and energy while as yet no National Socialism existed? Deep in the Germanic psyche, in a pit that is anything but a garbage-bin of unrealizable infantile wishes and unresolved family resentments. A movement that grips a whole nation must have matured in every individual as well ... And that is why [the] scope [of medical psychology] must be widened to reveal to the physician's gaze not just the pathological aberrations of a disturbed psychic development, but the creative powers of the psyche laboring at the future; not just a dreary fragment but the meaningful whole".[67]

Pointing out that neither Freud nor Adler is "a universally valid representative of European man," Jung suggests that the Jewish psychology is a representation of "the shadow that accompanies us all" for, he charges:

> The Jews have this peculiarity in common with women; being physically weaker, they have to aim at the chinks in the armour of their adversary, and thanks to this technique which has been forced on them through the centuries, the Jews themselves are best protected where others are more vulnerable. Because, again, of their civilization, more than twice as ancient as ours, they are vastly more conscious than we of human weaknesses, of the

[67] 'The state of psychotherapy today' ('Zur gegenwärtigen Lage der Psychotherapie', 1934), in *CW*, X:165.

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shadow-side of things, and hence in this respect much less vulnerable than we are.[68]

The psyche of the Germanic peoples contrasts with the predominantly rational ego-consciousness of the Jews, Jung argues, and that this accounts for the greater creativity of the former:

> The "Aryan" unconscious ... contains explosive forces and seeds of a future yet to be born, and these may not be devalued as nursery romanticism without psychic danger. The still youthful Germanic peoples are fully capable of creating new cultural forms that still lie dormant in the darkness of the unconscious of every individual ... The Jew, who is something of a nomad, has never yet created a cultural form of his own and as far as we can see never will, since all his instincts and talents require a more or less civilized nation to act as host for their development.[69]

While the archetypes of the collective unconscious are generally race-bound, according to Jung, they can be distorted by chthonic influences on the lower soul, or the subconscious. Thus Jung points to the influence that the mind and manners of a conquered people have on their conquerors. In America, for example, the Europeans have inevitably developed Indian morphological characteristics as well as psychological symbolisms. Some of their culture, on the other hand, is derived from the Negro:

> American music draws its main inspiration from the Negro; and so does the dance. The expression of religious feeling, the revival meetings, the Holy Rollers and other abnormalities are strongly influenced by the Ne-

[68] *Ibid.*

[69] Ibid.

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gro.[70]

Though Jung does not declare this mingling of racial characteristics to be entirely harmful, he extols the virtue of retaining one's links with one's native soil for "he who is rooted in the soil endures".[71] If we gloss this section of Jung's writings with the description of the Archetypes as constituted both of *a priori* forms and residues of empirical experience, as well as the Schopenhauerian elucidation of archetypes or Ideas as levels of Self-knowledge, we will see that these interactions of racial archetypes indeed entail alterations of the capacity of the individual egos to apprehend the inner reality of life or Psyche.

However, despite the racial and nationalistic dimensions of the Collective Unconscious, the aim of historical evolution, according to Jung, is indeed "individuation". Individuation is the fullest development of personality, and is a "Passion des Ich,":

> a conscious and deliberate self-surrender which proves that you have full control of yourself, that is, of your ego. The ego thus becomes the object of a moral act, for "I" am making a decision on behalf of an authority which is supraordinate to my ego nature. I am, as it were, deciding against my ego and renouncing my claim ... Hence it is quite possible for the ego to be made into an object, that is to say, for a more compendious personality to emerge in the course of development and take ego into its service. Since this growth of personality comes out of the unconscious, which is by definition unlimited, the extent of the personality now gradually realizing itself cannot in practice be limited either. But unlike the Freudian super-

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[70] 'Mind and Earth' ('Seele und Erde', 1931) in *CW*, X:46. cf. also 'The Complications of the American Psychology' (1930) in *CW*, X:508: "The inferior man has a tremendous pull because he fascinates the inferior layers of our psyche, which has lived through untold ages of similar conditions - "on revient toujours à ses premiers amours" - -- The barbarian in us is still wonderfully strong and he yields easily to the lure of his youthful memories. Therefore he needs very definite defenses --- the defenses of the Germanic man reach only as far as consciousness reaches. Below the threshold of consciousness the contagion meets with little resistance".

[71] 'Mind and Earth' in *Collected Works*, X:49.

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> ego, it is still individual. It is in fact individuality in the highest sense.[72]

It is not the continued assertion of the individual ego against the external world but rather the subsumption of this ego in the higher consciousness of the Absolute Self:

> But again and again I note that the individuation process is confused with the coming of the ego into consciousness and that the ego is in consequence identified with the self, which naturally produces a hopeless muddle. Individuation is then nothing but ego-centeredness and autoeroticism. But the Self comprises infinitely more than a mere ego ... It is as much one's self, and all other selves, as the ego. Individuation does not shut one out from the world, but gathers the world to oneself.[73]

The aim of individuation is the renewed participation of the individual self in the transcendent Self. For, the individual ego extends beyond consciousness to the realm of the spirit, or the Godhead. This Jung tries to illustrate by the example of the divinity of Christ:

> In the world of Christian ideas, Christ undoubtedly represents the self. As the apotheosis of individuality, the self has the attributes of uniqueness and of occurring once only in time. But the psychological self is a transcendent concept, expressing the totality of conscious and unconscious contents, it can only be described in antinomial terms (Just as the transcendent nature of light can only be expressed through the image of waves and particles) ... As an historical personage Christ is unitemporal and unique;

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[72] Jung, 'Transformation Symbolism in the Mass' ('Das Wandlungssymbol in der Messe', 1954), IV, ii, in *CW*, XI:258. As Aniela Jaffe puts it, "Individuation muß, in religiöser Sprache, als Verwirklichung eines "Göttlichen" im Menschen verstanden werden", Aniela Jaffe, *Der Mythus vom Sinn*, Zürich: Rascher, 1967, p.89.

[73] 'On the Nature of the Psyche' in *CW*, VIII:226. cf. Jung's letter, dated 23 August 1953: "Becoming conscious means continual renunciation because it is an ever-deepening concentration" (*Letters*, tr. R.F.C. Hull, Princeton: Princeton Univ. Press, 1973-75, II:120); cf. also 'Spirit and Life' ('Geist und Leben' 1926), in *CW*, VIII:325.

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> as God, universal and eternal. Likewise the self: as an individual thing it is unitemporal and unique; as an archetypal symbol it is a God-image and therefore universal and eternal.[74]

Jung's answer to the problem of loss of religion consequent on Freud's theories of civilization was thus not the traditional Judaeo-Christian one of a God in Heaven but a more philosophical interpretation of the symbolic significance of Christ using the ideal archetype of the self as an image of divinity. Jung also uses as an illustration of his ethical goal the Hindu doctrine of the immersion of the Atman in the Brahman, terms which served as sources of his conception of the Ich and the Selbst.[75] Jung insists that the ultimate consciousness of the Self is not the same as the ego, but rather a higher transcendent entity that is consequent on psychic evolution or the union of the individual ego with the unconscious anima. This higher reality is also the domain of real freedom, since the individual self is now integrated into the subject of the Psyche which is the absolutely free and creative Self. As Dieter Spies puts it:

> Im Selbst ist das Ich integriert in das größere Subjekt der Psyche, es ist sozusagen ... identisch mit dem "Anordner" der Psyche. Und in diesem Sinn ist der individuierte Mensch frei von jedem psychischen Zwang, denn Unterordnung unter die psychische Anordnung bedeutet nicht mehr Unfreiheit; es handelt sich jetzt gewissermaßen um die *eigene* Anordnung! Es ist Freiheit im transzendentalen Sinn. Alles Reden von und alle Sehnsucht nach Freiheit sind nur Antizipationen dieser Freiheit des Selbst-Seins.[76]

This freedom that comes with the realization of the individual as the Absolute Self is, also, not a selfish rejection of the

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[74] *Aion* (1951), V, in *Collected Works*, IX,ii:62f.

[75] See *The Psychology of the Transference*, in *CW*, XVI:264.

[76] Dieter Spies, *Das Weltbild der Psychologie C.G.Jungs*, Fellbach-Oeffingen: Bonz, 1984, p.192.

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world, according to Jung, but rather a realization of the identity of the individual self with that of other beings:

> the self is our life's goal, for it is the completest expression of that fateful combination we call individuality, the full flowering not only of the single individual, but of the group in which each adds his portion of the whole.[77]

This liberation of the ego is made possible by the fact that, in Jung's idealistic metaphysic, as we have noted earlier,[78] the external world of nature too is not matter alone but ultimately spiritual:

> Nature is not matter only, she is also spirit. Were that not so, the only source of spirit would be human reason. It is the great achievement of Paracelsus to have elevated the "light of nature" to a principle ... The *lumen naturae* is the natural spirit, whose strange and significant workings we can observe in the manifestations of the unconscious now that psychological research has come to realize that the unconscious is not just a "subconscious" appendage or the dustbin of consciousness, but is a largely autonomous psychic system for compensating the biases and aberrations of the conscious attitude, for the most part functionally, though it sometimes corrects them by force ... The unconscious is not limited only to the instinctual and reflex processes of the cortical centres; it also extends beyond consciousness and, with its symbols, anticipates future conscious processes. It is therefore quite as much a "supraconsciousness".[79]

By contrast, the Freudian discovery of the subconscious is

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[77] *'The Relations between the Ego and the Unconscious'* in *CW*, VII:240.

[78] See above p.

[79] 'Paracelsus as a spiritual phenomenon' ('Paracelsus als geistige Erscheinung', 1942) in *CW*, XIII:184f; cf. 'The phenomenonology of the spirit in fairy-tales' ('Zur Phänomenologie des Geistes im Märchen', 1948), in *CW* IX,i:239, and *Symbols of Transformation* (*Symbole der Wandlung*, 1952), II, in *CW* V:430..

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only of the "mirror-image" of the consciousness which contains only "distorted reflections of conscious contents".[80]

Given this metaphysical basis of his psychology, it is not surprising that Jung, unlike the materialist philosophers or psychologists, does not consider the realization of the ideal society to be dependent on modifications of social relationships. On the contrary, according to Jung, individual changes are the necessary condition of social changes. Jung's ideal of a spiritually regenerated mankind was completely opposed to the mass mentality of modern times parading in the guise of democracy, fascism, or communism. For, only the enlightened individual is capable of a truly impersonal social life in that he alone has realized the metaphysical identity of his individual self with that of the others. In fact, there are specific dangers in the communal models posited by both communism and fascism, since the communal ideal "puts a premium on the lowest common denominator, on mediocrity, and 'on everything that settles down to vegetate in an easy, irresponsible way'."[81] This leads to a gradual lowering of culture by restricting the possibilities of individual development, so that "the one source of moral spiritual progress for society is choked up".[82] Whereas Freud pointed to the dangers of the repression of instinct in civilized life, Jung points to the greater dangers of the suppression of the individual psyche in a heavily communalized society, for the repressed elements of the psyche fall into the unconscious and are "transformed into something essentially baleful, destructive, and anarchical".[83] We have here an explanation of the negative social results of the Freudian ethic discussed above.[84] The resulting "inexorable moral degeneration of society" can be checked only by the enlightened individual who has comprehended and assimilated the full range of his unconscious.

It may be mentioned that Freud, in his epistolary essay "Why War?" (1933), proclaimed that society would be best organized when the masses were subordinated to an elite who have

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[80] *The Relations between the ego and the unconscious*, II in *CW* VII:185.
[81] Odajnyk, *Jung and Politics*, p.58.
[82] *The Relations between the Ego and the Unconscious*, in *CW* VII:150.
[83] Ibid.
[84] See above p.14.

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subjected their instincts to "the dictatorship of reason".[85] Jung, on the other hand, saw the fascist state as resulting precisely from the rationalistic system of Hegel:

> The victory of Hegel over Kant dealt the gravest blow to reason and to the further development of the German and, ultimately, of the European mind, all the more dangerous as Hegel was a psychologist in disguise who projected great truths out of the subjective sphere into a cosmos he himself had created. We know how far Hegel's influence extends today ... [In Hegel we find] the practical equation of philosophical reason with Spirit, thus making possible that intellectual juggling with the object which achieved such a horrid brilliance in his philosophy of the State.[86]

Freud, who is Hegelian insofar as his repudiation of the instinctual life of man for being productive of the "illusions" of religion and civilization is directed by his admiration of reason, deserves the same rebuke that Jung aimed at Hegel. It is indeed significant that, in spite of his apparent "elitism", Freud considered the two principal upper castes, the church and the army, as two "artificial groups" bound, as all groups are, by libidinal ties to the leader, either Christ or the Commander-in-Chief, as well as to the other members in it. These ties, like all other ideal relationships, are considered to be based on the "illusion" that the leader loves all the members equally. Jung's idea of a national leader, on the other hand, was of one totally conscious of his self and his racial/-archetypal identity:

> the true leader is always one who has the courage to be himself, and can look not only others in the eye but above all himself – It is perfectly natural that a leader should stand at the head of an elite, which in earlier centuries was formed by the nobility. The nobility believe

[85] 'Why War', in *SE*, XXII, 213.
[86] 'On the Nature of the Psyche' in *Collected Works*, VIII:169-70.

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> by the law of nature in the blood and exclusiveness of the race.[87]

Jung, therefore, had a quite different understanding of the racial-psychological ideal which governs an idealistic nobility than Freud proposed in terms of his narrowly limited psychological categories.

Indeed, Jung was opposed to the deracinated individualism which calls itself "modernism." While commending democracy since it "takes account of human nature as it is and makes allowance for the necessity of conflict within its own national boundaries",[88] he definitely repudiates the "modern man" who is unhistorical and denies the past to live wholly in the present. Jung also deplores the projection of the personal desires and fears of the individual psyche onto society at large either in the form of patriotism, where the nation is considered a father or mother that is to be depended on or obeyed with complete obedience, or in the form of anarchic rebellion against this collective parent. For, as he put it, "resistance to the organized mass can be effected only by the man who is as well organized in his individuality as the mass itself".[89] Until the individual attains a considerable degree of self-recognition, he will remain vulnerable to mass movements and leaders who may use him as a pawn to further their personal ambitions. The truly modern man will be one who considers the present as a creative transition point between the past and the future, while the pseudo-modern men "appear by the side of the truly modern man [as] uprooted wraiths, blood-sucking ghosts whose emptiness casts discredit upon him in his unenviable loneliness".[90] The truly modern man is indeed proficient and creative in mastering the traditions of his culture and contributing his own spiritual creations to them.

Unfortunately, the years following the second world war have

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[87] *C.G. Jung speaking*, ed. W. McGuire and R.F.C. Hull, Princeton: PUP, 1977, pp.59-66.

[88] 'The Fight with the Shadow' (1946), in *CW*, X:225.

[89] 'The Undiscovered Self' ('Gegenwart und Zukunft', 1957) in *CW*, X:278.

[90] 'The spiritual problem of modern man' ('Das Seelenproblem des modernen Menschen', 1928), in *CW*, X:76.

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witnessed the triumph of the Freudian ethic over the Jungian. The widespread influence of the limited rational-materialistic psychology of Freud with its restricted understanding of the constitution and powers of the human mind can be said to have contributed to the inexorable vulgarization of the pseudo-modern man.[91] The corrective to this fragmented view of the world, wherein all civilization is reduced to its lowest psychological and social sources rather than traced to archetypal ideas which prefigure the spiritual possibilities of man, is perhaps to be found in the integrative psychology of Jung with its crucial dimension of spirit as the ultimate reality of the psyche, both individual and collective.

[91] While this is especially true of American society, the increasing influence of America on the mind of Europe should not be ignored either.

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The Humor Phenomenon: a Theoretical Perspective

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The topic of humor has an ancient history in the annals of mankind, although the "humor movement" only began in the 1960's. This article outlines some pertaining ideas on the origins of humor, and cites a number of the earliest references. A summary of the major humor theories is presented, subsumed under the headings of social, psychoanalytic and cognitive perceptual. A theoretical perspective for the humor phenomenon is offered, which incorporates original research findings as well as selected aspects of current thinking on this topic.

It is no exaggeration to say that humor, a distinctive characteristic of humankind, has been the subject of debate for two or three millennia at least. Among biblical references is the following verse from one of the earliest books in the Old Testament:

> "A cheerful heart is good medicine, but a crushed spirit dries up the bones." (Proverbs, 17:22. New International Version)

The earliest recorded direct reference to an aspect subsumed within the broad definition of humor, is generally accredited to Aristotle (384 - 322 B.C.). Commenting in *Poetics* that comedy had already acquired its (then) present features, Aristotle went on to say:

> ...we do not know who decided on masks, prologues, the number of actors, and so forth ... the making of plots came originally from Sicily... Homer ... was the first to outline the forms of comedy, by making a story not out of invective but out of the laughable" (Bambrough, 1963, p.415).

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Aristotle did, however, mention that comedy included improvisations from phallic songs, which leads Sypher (1956) to conclude that its origins can be traced to some sort of fertility rite, sacrifice or feast. This view is in keeping with the suggestion of Conford (Hyers, 1991) that the origins of both tragedy and comedy are to be found in the Spring rites. The first movement concerned the passing of the Old Regime) - this was the tragic component, whilst the second was the celebration of the coming of the new (youthful king, his wedding, a new beginning) - this was the comedy.

With regard to the overt expressions of laughter and smiling, it has been suggested that the former developed from a primitive "roar of triumph" in an ancient jungle duel (Rapp in Pettifor, 1992; Raskin, 1985). Roaring, or laughing was the way the victor released his accumulated energy, and it was also a communication that it was now safe to come out of hiding (Haig, 1988). Although Freud (1976) regarded the smile as the basic phenomenon of laughter, Lockard, Fahrenbruch, Smith and Morgan (1977) hold that it stemmed from silent, bared-teeth submissive grimaces, which later became a mark of social interaction and greeting.

Despite references to humor or comedy by early Greek and Roman writers, for much of subsequent recorded history significant contributions to the understanding of the humor phenomenon have been sparse and spasmodic. It is true that comedy writers were active. Meredith (1956) wrote that Shakespeare's (1564 - 1616) plays are saturated with the golden light of comedy - comedy that is redemptive as tragedy cannot be. Thomas Hobbes (1588 - 1679) had a few words to say on the nature of humor (Hobbes, 1969 edition), as did Immanual Kant (1724 - 1804) (Greig, 1923) and Charles Darwin (1809 - 1882) (Darwin, 1965 edition).

A major advance in our understanding of humor came with the publication of Sigmund Freud's book *Jokes and Their Relation to the Unconscious*, in 1905. With a few exceptions, for example Greig (1923) and Radcliffe-Brown (1940), reported research on the subject in question was conspicuous by its absence. Then, during the 1960'8, there was a surge of interest - the "Humor Movement" (Korotkov, 1991), with the realization that humor and laughter serve important roles in maintaining and enhancing quality of life.

Despite the plethora of topical publications that have appeared

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in the last quarter of a century, and the various theories that have been advanced, a definitive and satisfying explanation of the phenomenon we call humor may as yet remain to be compiled. The present contribution summarizes the standpoint of current humor theories under the headings of Social, Psychoanalytic, and Cognitive-Perceptual. An original theoretical perspective of the construct is then offered. This is not simply a combination of existing ideas, but embraces the outcome of humor research carried out by one of the present authors.

Humor theories

Social

There are many avenues where humor can become involved in the interaction among people. The "roar of triumph" mentioned earlier served as a communication to others. Darwin (1965) stated that laughter can announce a discovery, whilst Greig (1923) refers to the infant's smile of recognition, and its laughter which communicates joy. Communal laughter, states Francis (1988), informs others that we have got the point of a joke and, in fact, recorded laugh tracks are often used with broadcast comedy programs to bring about increased laughter among the listeners (Chapman, 1976; Neuendorf & Fennell, 1988).

In addition to its role in communication, humor can aid social facilitation. Chapman (1975;1976) in this respect concludes that sharing the situation with at least one other person facilitates humorous laughter. He links this to increases in arousal which are then decreased by laughter - a cycle that gives pleasure and which can be repeated. Neuendorf and Fennell (1988) explain that individuals are encouraged to join in social laughter to show they are one of the group, but also that the reaction of others provides cues as to what is funny.

The part played by group dynamics has been discussed by several writers. Leventhal and Safer (1977) argue that the content of humor is conditioned by the socio-cultural background of the parties involved, and Pollio (1988) adds that analyses of jokes must always take account of the socio-personal field in which laughter occurs. In fact, Duncan and Feisal (1989) go so far as to say that all humor is situation-specific, and can only be interpreted within that context.

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One of the oldest theories of humor concerns the superiority of the originator and the debasement of the victim or butt of the joke. The early Greek philosophers were the first to record that laughter often occurs at the expense of someone less fortunate. Plato, agreeing with Aristotle, observed in Philebus that "... when we laugh at the ridiculous aspects of our friends, the admixture of pleasure in our malice produces a mixture of pleasure and distress" (Gosling, 1975, p.50). Hobbes (1969) in Leviathan (first published in 1651) was of the opinion that laughing at the inferior builds our self-confidence and makes us feel superior. In modern times, the superiority notion is manifest when one group of people (the "ingroup") tells unkind jokes about others (the "outgroups"). The effect is to ostracize the outsiders and reinforce the social distance between them and the insiders, whilst strengthening the unity of the insider group and the speaker's status within that group (La Fave, Haddad & Maesen, 1976).

Variations on Superiority Theory include the emphasis on ridicule, which Wilson (1979) mentions may have a positive aspect. He explains that there seems to be a norm that permits people to engage each other in controlled hostile joking, whereas open (physical) aggression is socially unacceptable. Ridicule has the effect of enforcing conformity within a group through shared sentient, when the joke is at the expense of outsiders, or when there is the threat of individual members becoming the victims.

Another related theory concerns disparagement, which Giora (1991) states is based on the premise that what we laugh at is never our own, but another's weaknesses. The techniques include put-downs, belittlement, debasement and humiliation (Zillerman & Cantor, 1976). In similar vein is Disposition Theory, where mirthful behavior in response to a humorous presentation is believed to be influenced by one's affective disposition toward the agent or entity being disparaged (Gutman & Priest, 1969; Zillerman & Cantor, 1976).

Psychoanalytic

Freud (1976) regarded wit, the comic, and humor as three separate ways of deriving pleasure from intellectual activity. The actual pleasure stems from a saving of affect. In the case of wit, the saving is of inhibition, and for the comic it is of thought. For

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humor, there is a saving of feeling, and Freud adds that one enjoys seeing oneself in a non-serious light, even if the facts of the matter do not logically justify it.

In addition to harmless and innocent jokes, there is the tendentious variety. These are listed by Freud (1976) as being either obscene, aggressive, cynical or what he calls "skeptical" (p.161). Although some of the pleasure in tendentious joking derives from the economy of technique, its main source is believed to lie in the gratification of aggressive or sexual wishes in an indirect and socially acceptable way.

Freud (1952), in a later short paper, stated that the defense mechanism of humor comes about when we would normally be attempted to release a distressing emotion. Instead, humor withdraws the painful affect from conscious attention, thus bringing about a saving in expenditure of effort. The energy thus set free, as with wit and the comic, is discharged as laughter. Humor is unique among Freud's triad, in that it does not necessarily require the presence of another person - pleasure can be derived by contemplating a real or imaginary situation (Freud, 1976).

Although Freud's views do not readily lend themselves to experimental investigation Redlich, Levine and Sohler (1951) did demonstrate some support for psychoanalytic theory by revealing a link between results on their Mirth Response Test, clinical diagnosis, and overt symptoms from subjects classified according to six psychiatric conditions. The point is made by La Fave et al, (1976), however, that Freud himself never actually performed any controlled research on humor, and queries have been raised by a number of writers on the validity of some of his propositions (Kline, 1977; Raskin, 1985; O'Connell, 1987; Long & Graesser, 1988; Ruch, Ott, Accoce and Bariaud, 1991).

Other approaches which may be subsumed under the psychoanalytic umbrella include on the one hand surprise and arousal theories and, on the other, those concerned with relief and release. The role of the element of surprise in humor can be traced to its origins, with the pleasure of a successful attack, and to the ideas of early writers including Hobbes and Darwin. Research such as that by Schachter and Wheeler (1962) with the effect of artificially induced arousal on mirth, and of Langevin and Day (1972) with

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physiological measurements taken during exposure of subjects to cartoon humor, attest to the association of humor experiences with excitation of certain physiological processes.

On the other side of the coin there are theories which emphasize liberation and freedom, and the notion that humor is a mechanism for the release of internal tensions and fears (Johnson, 1990). McGhee (1977) stresses that the relief phase of the syndrome only occurs when the arousing stimulus is evaluated as safe and inconsequential, whilst Raskin (1985) holds that laughter is the release of excess mental energy, adding that the element of surprise in a joke is usually delivered by the punch line.

Cognitive-Perceptual

Included within this group are terms such as incongruity, ambiguity, the ludicrous, and various manifestations of intellectual play. Although the notion of cognitive involvement in humor is relatively recent in comparison with some other theories, comments which hint at the mental processes involved do nevertheless date back at least 300 years. Greig (1923) quotes John Locke as stating (in 1690) that wit lies in the assemblage of ideas, with quickness and variety, so that some incongruity is found.

A postulated link between humor and the intellect has been suggested in more recent times. Berger (1976) believes that humor is unique in that the relationships it establishes contain incongruity, and Shibles (1978) comments that it must involve thought - nothing in itself is funny. Similar ideas are stated by McGhee (1979) and Gordon (1986), whilst Johnson (1990) adds that cognitive-perceptual humor theory implicates the disparity between the expected and the actual.

It was, however, Suls (1972) who gave the notion of cognitive involvement a boost, with the introduction of his "Two-stage model for the appreciative of jokes and cartoons". This proposes that, in the first place, the perceiver finds his or her initial expectations about a story, episode or cartoon disconfirmed, thereby creating an incongruity. He or she has, in fact, been deliberately led astray. In the second phase, the perceiver uses his or her mental processes to find a cognitive rule (logical proposition, definition or aspect of experience) that reconciles the apparent incongruity. Thus, according to Suls, humor results from the perception of an initial

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incongruity, which is then made congruous in an unexpected way. If there is no resolution or no surprise, or if the initial puzzle is resolved perfectly logically, then there is no humor.

For a joke to be perceived as funny, it must be neither too difficult nor too easy (Leventhal & Safer, 1977). It appears there is an optimum level of cognitive effort required for the resolution of humorous incongruity, just as arousal theory postulates an optimum efficacy for arousal itself. An appropriate level of intellectual acuity must, therefore, have been attained in order for humor to be appreciated. This point is at least borne out by research with children where, for example, Barnhart (1989) was able to conclude that humor peaks when the cognitive demand equals the cognitive level of the child.

Mere intellectual activity alone is surely not sufficient to explain the humor phenomenon: a playful mind-set or disposition would appear to be also necessary. Levine (1977; 1980) refers to humor as being a form of play, noting that the two share many important characteristics including being sources of pleasure. This view is shared by Morreall (1991), who states that the play of humor is precisely the opposite of work. A playful approach will enable the beholder to see situations in a ludicrous context (Schaeffer, 1981), and this would seem to be a requirement for humor appreciation. Poland (1990) aptly sums up this view when he comments that a natural sense of humor is the "... capacity for sympathetic laughter at oneself and one's place in the world" (p.198), thus echoing Freud's (1952) statement that the world amounts to "Child's play - the very thing to jest about!" (p.220).

Consolidation of Existing Humor Theories

Figure 1 illustrates an attempt to represent diagrammatically some of the ideas discussed above, and to link them phylogenetically to show possible connections with the three groups of humor theories. It will be noted that innocent (verbal) humor is shown to have a bearing on each of the theory categories, whereas the aggressive verbal and non-verbal varieties are depicted as influencing only the psychoanalytic and social groups. Although it may be somewhat simplistic to show cognitive-perceptual theory as starting only from innocent humor, the arousal-release influence is still applicable in this case.

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With regard to the contributions of the major theories, the Social group of theories can be thought of as dealing with applied humor: communication, social lubrication, correctiveness, and the like. By contrast, the Psychoanalytical theories are concerned with the subconscious or unconscious workings that are mostly out of one's control. These largely remain as Freud left them; logically sound but rather difficult to confirm by scientific experiment (Long & Graesser, 1988). The third group, Cognitive-Perceptual, is more amenable to observation and experimentation, dealing as it does with intellectual development, incongruity-resolution and other language "games". Such ideas perhaps reflect Man's elevation from his jungle of origin, where physical survival was the prime behavioral motivator, to the civilized being who now gains pleasure from his intellect rather than just his physical attributes.

A revised theoretical perspective of humor

In a factor analysis study of appreciation for cartoon humor among 129 subjects, one of the present authors (Lowis, 1993) tentatively identified a factor relating to strife in family relationships (especially the derision of the husband/father figure). This is in keeping with the findings of some other workers, notably Herzog and Larwin (1988). The corollary of this is that those who have a relatively impoverished range of life experiences (and this would include youngsters), will be less likely to find such behavior amusing. In short, cartoons (and by implication perhaps other sorts of humor) will be appreciated more if they concern themes or situations with which the viewer can associate. There was also an increase in funniness scores with age, which could likewise be related to older subjects having experienced more of the situations parodied in the cartoons.

The present article concludes with a suggested theoretical perspective for the humor phenomenon. The ideas of Cognitive-perceptual theory are given dominance, but the relevance of certain aspects of Psychoanalytic and Social theories is acknowledged. Conclusions from the research by Lowis (1993) are incorporated where applicable. It is believed that any statements on humor should reflect the circumstances as they exist in current times, corroborated where possible with evidence obtained through application of the scientific method. The original offering given

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Model of Suggested Origins of Laughter and Smiling, and their Phylogenetic Relationships with the Major Humor Theories

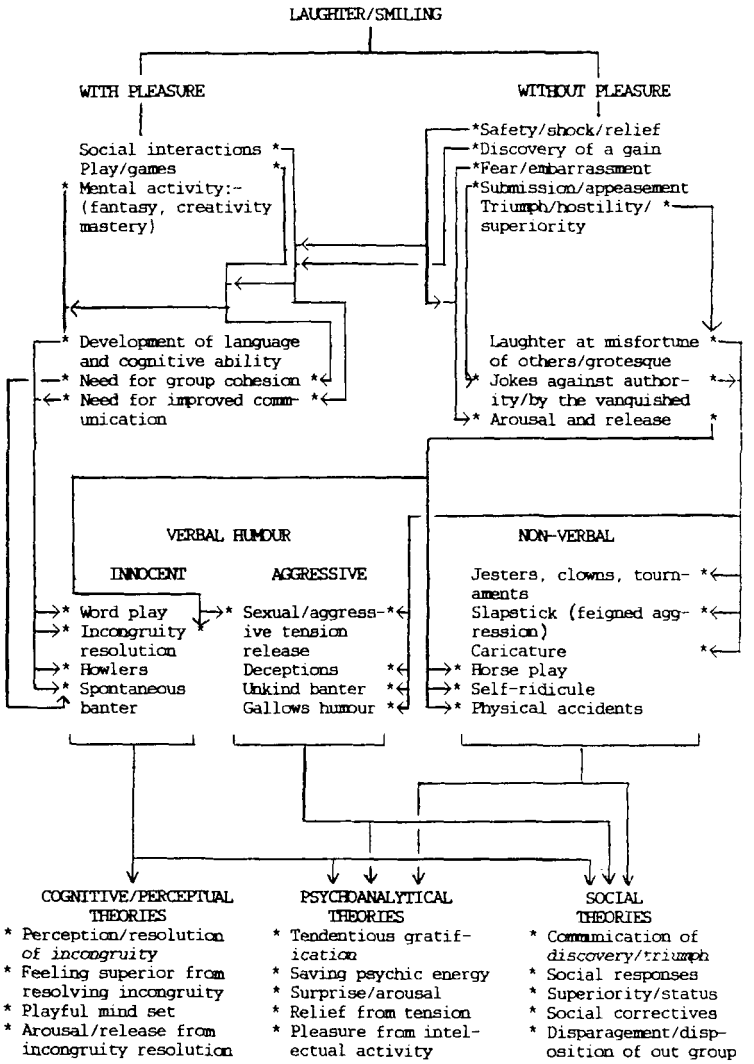

FIGURE 1

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below attempts to follow these principles.

The Humor Phenomenon

Just as beauty is regarded as being in the eye of the beholder, so humor is in the perception and cognition of the observer. It surrounds us virtually all the time, waiting to be interpreted as such by those receptive to its cues. Although some humor may be only a little removed from its postulated origins in primitive times, for example the amusement gained from witnessing the misfortunes of others (especially if this concerns an adversary), humor in Civilized Man usually involves higher and more complex processes than mere raw emotion.

The necessary conditions for humor appreciation are believed to be, inter alia; a revel of intelligence above a certain minimum, development of appropriate language skills, a creative ability, a playful disposition, and sufficient life experience to be able to relate to the situation depicted in the joke. As Freud (1976) said, humor arises from an attitude within an individual regarding his or her situation. It follows that a scenario will be seen as amusing if it parodies in a somewhat exaggerated (but not excessively so) form, something to which the beholder can relate. An incongruity needs to be present in order for the circumstances to be depicted as different from the normal reality, but the context must be ludicrous (ridiculous) or it will simply be interpreted as unusual per se.

The sequence of events leading to the experience of the emotion of humor are, therefore: auditory or visual stimuli (possibly input through other senses also) are detected by the receptive individual; he or she playfully processes the message and perceives an incongruity among the elements; this is placed within the framework of the ridiculous, and the whole is seen as a parody or exaggeration of a situation which is within the life experience of the recipient. The recognition of this association results in a pleasurable emotional state, which is coupled with the release of tension built up during the preceding intellectual effort. This enjoyable affect is experienced as amusement: the exhilaration of non-serious mental effort and a re-affirmation that life is fun.

The amusement generated by humor, and the release of

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mental tension, may be accompanied by overt manifestations of smiling and laughter. This is not, however, a necessary condition for the perception and cognition of an event as humorous.

Humor has survival value, which has led to its continued existence and development throughout the history of humankind. Among other uses, it facilitates gregarious behavior and social cohesion, and therefore encourages communal effort toward advancement of the species. As a defence mechanism, the creative element in humor assists in the generation of alternative perspectives for a problematic situation, with the result that additional potential solutions for it become evident. The final outcome is that the problem seems to be less serious than it was originally perceived to be. In Freud's (1952) words, it is merely child's play, the very thing to jest about!

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The Double Nature of Prejudice

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Those who use the popular term "prejudice" seldom pause to reflect that the term has several different meanings. There is prejudice as pre-judgment based on either accurate or erroneous experience; but there is also an innate biological prejudice which serves an important evolutionary role. Speciation, an essential aspect of evolution, can only occur when newly emerging subspecies can be prevented from crossbreeding with each other, since the admixture of subspecies, which have not yet grown into separate species and lost the *biological* ability to be mutually fertile, would automatically destroy all evolutionary experiments. No new species could ever evolve if subspecies – new species in the making – were not genetically isolated until such time as they had lost the biological ability to interbreed. This kind of prejudice is therefore widespread among feral forms of higher life, but can be suppressed under conditions of captivity or domestication.

The term "prejudice" has two quite different meanings. One meaning relates to the interpretation of perceived data, and is therefore intellectual in character; the other is rooted in deeper, biological emotive drives, and serves or once served an evolutionary function. In popular usage, the first implies hasty and faulty decision-making, whereby someone or something is condemned for reasons which have no validity. The second is more scientific, referring to an in-built or acquired distaste which causes the beholder to maintain a wary distance from members of disparate subspecies or cultures. Public expression of thoughts or actions related to this kind of "prejudice" has become virtually a "hate crime" in recent years – but in reality it is a basic part of human psychology which, properly exercised, serves useful intellectual as well as biological roles. One might even say that it is one of the main pillars on which civilization was built, and one without which civilization might well collapse.

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The purpose of this essay is to suggest routes by which the nature and function of prejudice might be more objectively researched.

Clearly, where the term 'prejudice' is used to refer to hastily formed opinions not based on accurate evidence, then by definition anyone who is guided by such false analyses is foolish, and this kind of prejudice will surely prove a severe handicap in life. But that is merely to say that faulty judgment is not a good guide to one's actions.

But apart from the use of the term 'prejudice' to refer to patently illogical behavior, there are two forms of "prejudice" which constitute valid and useful – one might even say essential – human behavioral patterns, both of which serve invaluable roles. One is intellectual and the other biological. The latter has deep evolutionary origins and purposes, but let us first consider prejudice as an intellectual function.

Prejudice as an Intellectual Shortcut to Decision-Making

In its intellectual sense, prejudice is literally 'prejudgment' based customarily on the experience of an individual or of his or her society. It is an intellectual device for facilitating rapid decision-making under the pressure of sudden changes in the external environment. As such it can be particularly useful to individuals trying to cope with the pressure of modern existence. Few of us could get through the day if we had to make a fresh decision on every issue that faced us during our waking hours, as though it were the first time they had ever experienced that set of problems.

Fortunately, people can save a lot of effort by referring to past experience, since humans are endowed with memory and reasoning powers that enable us to retain the memory of events and to be able to classify these and so learn from experience. Many of the opinions which we acquire, either from our own experiences or from those of our associates, or even from the collective experience of our society, are called 'prejudices.' These constitute preformed opinions either in favor of something or against something. When rooted in accurate observation and intelligent analysis, such *pre-judgments* are referred to with respect as "experience." Experience is an invaluable guide to our daily life, representing concise

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prejudgments which can be more or less reliably applied to new situations which are essentially parallel to past experiences. In short, the 'experienced' individual has found that people from one occupational, national, social, religious or ethnic group tend to react in similar ways in the same circumstances, and is therefore prepared for the possibility that others of the same group will possibly behave in parallel fashion. Experience inspires caution and suggests appropriate routes of action. The intelligent person with ample time at his or her disposal could theoretically decide to think out each new confrontation, but most people find themselves daily in situations without the time or the opportunity to make elaborate enquiries. So they call upon prior experiences to guide them in deciding what action to take.

Hiring job applicants requires us to rely heavily on past experience, and the sum content of past experience in this situation is nothing more or less than the much-condemned but essential 'prejudice'; favorable or otherwise. One can be prejudiced in favor of something as well as against something. This is intellectual "prejudice," a short cut to decision-making based on prior experience, without which a busy person could never get through the day.

Biological Prejudice

Mankind has from the earliest of times been divided into separate social groups. Even in the modern world, human nature, and the need for functional collaboration, still causes the individual to belong to what is sometimes a complex mass of social networks. Here, too, prejudice plays a social function. Mankind's ability to communicate one with another has given rise to collaborative endeavors and a community existence. But every team works better when the individual member identifies closely with it, and prejudice, generally of a pro-ingroup and anti-outgroup nature, tends to bind the members of the ingroup together more strongly, and to enhance the self-image of the individual by making him or her feel safeguarded as a loyal member of the ingroup by adherence to the group's values and sense of exclusive identity. It similarly plays an important role in promoting effective cooperation.

But there is another kind of prejudice that has been identi-

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fied by biologists: it is common to all men, and to some extent may be noted among many of the more advanced animals, particularly those living under feral conditions. This kind of prejudice serves an essential biological role of profound evolutionary significance. It makes speciation possible among the higher and more mobile life forms by protecting incipient experiments in species and subspecies formation from elimination through hybridization.

An essential part of evolution has been the trend from the primitive uniformity of early life forms to the rich variety of diverse species, sub-species, and races which today inhabit the earth. Both evolutionary trends – the trend towards increased specialization in response to the needs of particular environmental niches, and the evolutionary trend toward greater variability of response (including higher intelligence) to cope with different environments – depend on the genetic isolation of the emergent subspecies or races that are, in effect, Nature's experiments.

Speciation, or differentiation into separate races (and eventually into new species which are so different from each other that they have lost the ability to crossbreed) is the basis of evolutionary progress. Without race formation and genetic separation, evolution could never have occurred. Evolution is simply Nature's way of behaving, and, to Nature, prejudice is an honored quality, something without which evolution could not have survived among the higher and more mobile populations that are not separated from each other by geographical barriers.

How is this?

To properly understand the biological forces which cause healthy-minded people, as well as animals in a non-domesticated or "feral" state, to maintain a healthy reproductive distance from other subspecies, we must realize that evolution is a process by which existing life forms become differentiated into more specialized subspecies and races. Some life forms specialize by becoming closely adapted to the conditions of life in their particular environment; others, such as mammals, develop the ability to vary their reactions to meet the challenge of changing environments. Thus heat control systems enabled mammals to move between different climates; man achieved the same ability to cope with different environments through improved intelligence.

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The necessity for genetic isolation as a prerequisite for evolutionary development is obvious. Any population that is beginning to evolve certain specific qualities would soon lose those distinctive qualities if it loosely interbred with other populations which were developing in different ways. Simply speaking, evolutionary advancement, let alone survival, depends upon those groups which are developing in a particular direction staying reproductively separate from those which are developing in a different direction.

In the case of simpler life forms, geographical distance is usually sufficient to ensure genetic isolation, but the more advanced and more mobile forms of life, such as birds and mammals, require other defenses to prevent the accidental hybridization that could occur when two different sub-species, each evolving in different directions, chance to meet. Clearly, the evolutionary process would be frustrated if every new biological or evolutionary experiment – each new race – were to be eliminated by back-breeding with other populations that were not specializing in the same direction. In short, during that dangerous period when emerging races are evolving into separate species, but have not yet become so different from each other that they have lost *biological ability* to crossbreed, their genetic identity must be protected from crossbreeding by some form of barrier, either geographical or psychological, which will effectively prevent Nature's experiment from being eliminated by hybridization. 'Racial prejudice' is one of the mechanisms that serve to preserve sub-specific identity by discouraging hybridization.

The important role of racial differentiation in the evolutionary process was clearly perceived by Theodore Dobzhansky as early as 1977, when he observed that evolutionary progress takes place by way of "speciation" or the formation of separate races. Provided a race does not mix with other races, he noted, it has the opportunity to continue to progress in its own direction along the evolutionary road. At lower levels of evolution, genetic protection is customarily provided by geographical barriers or simply geographical distance. This would also have been largely the case at the earlier levels of hominid evolution. But as man became more mobile, more capable of moving easily and rapidly from one environment to another, geographical barriers would decline in

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their effectiveness as genetic barriers, and the only way that the individuality of the disparate evolving populations could be preserved is through the development of biological mechanisms that would discourage admixture with other experimental groups. In evolutionary terms, "racial prejudice" is a defense mechanism developed by Nature to keep emerging races or subspecies from hybridizing themselves out of existence.

As Dobzhansky (1951) puts it:

> If (the) differentiation is allowed to proceed unimpeded, most or all of the individuals of one race may come to possess certain genes which those of the other race do not. Finally, mechanisms preventing interbreeding of races may develop, splitting what used to be a single collective genotype [racial group] into two or more separate ones. When such mechanisms have developed and the prevention of interbreeding [hybridization] is more or less complete, we are dealing with separate species. A race becomes more and more of a "concrete entity" as this process goes on; what is essential about races is not their state of being but that of becoming. But when the separation of races is complete, we are dealing with races no longer, for what have emerged are separate species.

Any divergent or evolving sub-species has to undergo many changes before it can reach that level of differentiation at which it loses the ability to crossbreed with other populations which were originally identical to it. Thus evolution would have been totally halted amongst advanced mobile forms of life if factors such as prejudice had not emerged to discourage genetic mixture between populations evolving in different directions. Today, prejudice still tends to slow down hybridization between the different races of the world, but Nature's ability to direct evolution among the different varieties of modern man, representing some of its finest experiments and greatest achievements, has declined from a variety of reasons, mostly rooted in dysgenic forms of culture that have developed among mankind as the latter becomes more "domesticated" or non-feral. In particular, the elimination of racial differentiation through hybridization is weakening under the pressure of human ideologies which are antithetical to biological realities.

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Dobzhansky (1951) continues:

> Races and species as discrete arrays of individuals may exist only so long as the genetic structures of their populations are preserved distinct by some mechanisms which prevent their interbreeding. Unlimited interbreeding of two or more initially different populations unavoidably results in an exchange of genes between them and a consequent fusion of the once distinct groups into a single greatly variable array. A number of mechanisms encountered in nature (ecological isolation, sexual isolation, hybrid sterility, and others) guard against such a fusion of the discrete arrays and the consequent decay of discontinuous variability. The origin and functioning of the isolating mechanisms constitutes one of the most important problems of the genetics of populations.

Restraints Against Hybridization

What prevents the negation of Nature's work of species creation when the higher, more mobile, animals are able to move around and make contact with other separately evolving "races"? What prevents hybridization when geographical and ecological barriers cease to be significant?

Under "feral" or "natural" conditions the higher, more mobile life forms evolve a sense of territoriality, whereby they isolate themselves in their own breeding grounds on a psychologically-dictated geographical basis. But not only this, they also develop what zoologists call "feral restraints." They develop a strong psychologically-motivated disinclination to interbreed with members of other subspecies. These "isolating mechanisms" may be seen as "agents to ensure the mechanism that keeps them on their peaks by preventing ... hybridizing" (Paterson, 1978).

The geographical isolation of separate sub-species or races, each in the process of evolving into different and "non-equal" species, will often be sufficient to protect the evolutionary process from any genetic intermingling of the new "experimental" varieties before they have become sufficiently differentiated to be biologically incapable of miscegenation. As Dobhzhansky remarked, geographical separation is not always effective in the case of the more advanced, mobile forms of life, and these "feral restraints" now play an increasingly important role in discouraging crossbreeding on those occasions that individuals from divergent populations do chance to meet.

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Zoologists have identified two types of such constraints, the first of which are called physiological constraints, which may take the form of distinctive shape, color, smell, or even patterns of movement, common to animals or even humans of the same sub-species or race, but different from those of other populations. Such distinctive characteristics serve as a warning to members of a sub-species or race not to attempt sexual relationships with those that are biologically different. They are like a sign that reads "Danger! a new biological experiment is in progress. Do not approach!" (Simpson, 1964). Such physiological constraints are not very powerful among "domesticated" animals such as cats and dogs, whose normal patterns of behavior have been altered by man; nor are they so strong among urbanized humans, despite the fact that human races do differ in numerous ways, including even smell (though human olfactory organs have largely lost their sensitivity). The fact is that urbanized human beings find themselves in "cultural cages" which distort their natural patterns of behavior, in much the same way that captivity in a zoo or domestication alters the natural patterns of behavior among animals.

But in addition to these physiological constraints, the distinguished zoologist, Peter Klopfer, (1970) has shown that psychological constraints have also developed to restrict hybridization. Racial prejudice is of this order – it is a psychological "imprint" that serves to discourage members of one race from interbreeding with another. Interestingly, one finds it stronger among rural, less culturally-distorted populations, than among urbanized populations, who are no longer living quite so "naturally," and whose behavior is often distorted by ideologies that have no biological survival value and are racially "destructive" from the evolutionary point of view.

Domestication Distorts Innate Behavior Patterns

Again, by comparing the behavior of caged or domesticated animals with heavily urbanized and intellectually distorted human beings, we can see how "domestication" can promote hybridization and similar "unnatural" behavior. When territoriality is broken down, by urbanization in the case of man or by domestication or caging wild animals in zoos, the pattern of natural behavior is largely lost, and "perversions" or unnatural behavior results. The behavior of domesticated animals shows that while they still retain innate patterns of inherited behavior these express themselves in a confused and evolutionarily-useless variety of patterns. And the behavior of caged animals also often becomes quite extensively deranged.

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In the case of caged animals they may refuse to eat, and those that become accustomed to caged life sometimes practice homosexuality or even try to mate with animals of other breeds (Calhoun, 1962) – an activity which they would avoid in their natural or "feral" conditions, and which regularly repeated would necessarily result in hybridization and thus negate evolutionary development by destroying thousands of generations of racial diversification.

In the case of mankind, culture, particularly as developed under the unnatural congestion of urbanized conditions (which negates man's natural territoriality), may likewise pervert human instincts and encourage abnormal patterns of behavior ranging from homosexuality to a quest for abnormal erotic experiences including interracial sexual experimentation. Racial prejudice, to the extent that it discourages any urge to interbreed with other races, is today a weaker force than it used to be in American society, but nevertheless it is a part of the natural order of things, and should be understood as such.

Nor is prejudice new. We may recall that the Romans had several proverbs which may be cited as reflecting "prejudice." One proverb warned *distortum vultum sequitur distortio morum*, "A crooked countenance is followed by crooked morals." Today people often look at someone with a "crooked" countenance and think to themselves, I wouldn't buy a used car from *him*. More obvious still, Horace (Sat. 1. 4, 85) cites another widespread Roman proverb: *Hic niger es; hunc tu, Romane, caveto*. To the Romans, of course, those who were *niger* were generally conquered peoples or potential enemies. Prejudice is older than humanity. It is a natural part of the human personality; and it is there because it serves an evolutionary purpose. Prejudice, both biological and intellectual (except when based on inaccurate reason in the latter case), still serves a useful purpose for those who hold it. It may be simply a shortcut to decision-making based on prior experience - in which case it can lead to unreasonable and inappropriate reactions when past experience proves to be a faulty guide to the present circumstances. Or it may be a cultural device which serves to maintain group cohesion in competition with rival groups. Or it may be a response to a deep biological imperative to preserve the identity of the race by helping to maintain the integrity of the gene pool.

Whichever of these categories a specific "prejudice" may fall into, the very existence of prejudice calls for a better understanding of its causal, functional, and evolutionary nature.

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Planetary Periods from the Rigvedic Code

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The Rigvedic astronomical code numbers are further examined. It is argued that information on the periods of the five planets can be derived from the code described in previous articles by the author. How the code might have been created is also sketched.

1. Introduction

The discovery of the Rigvedic astronomical code and its partial decipherment (Kak 1992, Kak 1993b, Kak and Frawley 1992) raise questions about the nature of the astronomical knowledge of that era. The decipherment has shown that the Rigvedic Indians were careful observers of astronomical phenomena. But we touched upon the motions of the sun and the moon alone in the previous papers. It is possible that the Rigvedic astronomers did not give the same care to the planetary motions as they did to the sun and the moon. In fact such a conclusion would appear natural if one were to consider the contents of the *Vedāṅga Jyotiṣa*, a text generally believed to have been composed around 1300 B.C.E. (Kuppanna Sastry 1985), because it does not address planetary motions at all. But on the other hand, the Vedic gods sometimes personify planets, as in many references to Aśvins indicating they are the morning and evening stars, or Mercury and Venus. There are also arguments suggesting that Varuna and Mitra sometime represent the moon and the sun and the five Ādityas represent the five planets. Similarly Bṛahaspati appears to represent the planet Jupiter. Nevertheless it is important to remember that the Vedic deities are symbolic representation of time and they can be used interchangeably.

It appears that the Vedic Indians did study the planets but since this knowledge was not of significance in calendrical concerns

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texts like *Vedāṅga Jyotiṣa* they had no need to discuss it. On the other hand, in cosmological theory and speculation, as is the concern of the Rigvedic code, information about the planets should show up. With this background we take up the question of planetary astronomy. We will show that there is considerable evidence in the organization of the Ṛgveda that leads to the conclusion that period information on the planets was known. We will also sketch how the hymn numbers might have been chosen.

2. The Code and Our Method

Why should one believe that the number of hymns by the books of the Ṛgveda is anything more than a set of ten randomly chosen numbers of no significance? The answer to this question is provided by the clear statement of the Śatapatha Brāhmaṇa that the Ṛgveda should be considered an altar of mantras. Śatapatha Brāhmaṇa also states that the altars are designed to represent astronomical facts about the year (Kak 1993a). There are also references (such as SB 10.4.4.2) that indicate that the Ṛgveda expresses certain cosmological facts.

An examination of the Ṛgveda bears out the above. We find that the number of syllables, the number of verses, and the number of words were all chosen according to certain astronomical numbers. It is very likely then that the number of hymns in the different books of the Ṛgveda was also chosen according to a deliberate design. This was the starting point of my analysis.

Briefly, the decipherment was based on the consideration of 339 and 108 as the two primary numbers in the Rigvedic code, where 339 is the number of sun-steps during equinox and 108 is the distance the sun and the moon have in terms of their own diameters from the earth. The number 339 is one third of the total number of hymns and 108 is one half of the total number of groups. How these numbers might have been computed has also been sketched. The Rigvedic code explains the sacredness of the number 108 since that number symbolizes the separation between the earth and the sky. Counting the 108 beads of a rosary represents the symbolic passage from the earth to the sky.

The altar design references assign earth the number 21, space the number 78, and the sky the number 261. The

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space+sky number is 339. It was suggested that the assignment of 78 to space was by to the equation where 183 are the days in the Uttarāyana, the half year devoted to gods. In other words, the Vedic astronomers took the sun (or the moon) to make 339 steps in the sky because it had to traverse the space at sunrise and sunset in addition to the 183 steps paralleling the half-year. As explained elsewhere (Kak 1993a), this correspondence was based in the Vedic theory of knowledge according to which there exist equivalences (*bandhu*) between the cosmological (*adhibhūta*), the theological (*adhidevata*) and the spiritual (*adhyātma*) aspects of reality which are all represented together in the ritual (*adhiyajña*). The Vedic theory also implies that these equivalences are to be found across levels of representation. The reason why the Rigvedic code did not come to light earlier is because no attempt was made to explore the equivalences with the altar ritual. The fact that the earliest Buddhist and Jain philosophers derided the Vedic ritual implies that the astronomical basis to this ritual had been forgotten by that time.

The Rgveda consists of 10 books. For ready reference Table 1 gives the number of hymns and their traditional groupings in the various books.

Table 1: Number of Hymns

Book	1	2	3	4	5	6	7	8	9	10
Hymns	191	43	62	58	87	75	104	92	114	191

Consider now the question of how many pieces of independent information might have gone into constituting the Rigvedic code. We have identified the numbers 339 as well as 296 and 382, which are the sun-steps during equinox, winter solstice, and summer solstice, respectively as being basic to the various totals of the hymn numbers. This tells us that if the arrangement of the Books was entirely by design then there should be another seven independent pieces of information. If our inference that the Rigvedic astronomy was based on careful observations is correct

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tion on the periods of the planets. This information could be in terms of sidereal or synodic periods or both. The sidereal period is against the background of stars whereas the synodic period is the interval from the date a planet is in the middle of its retrograde motion to the next date it is in similar state. Naked eye astronomy suffices to compute both such periods.

It is to be expected that the synodic periods will be more accurate than the sidereal ones because the latter are much longer, unless the Rigvedic astronomers had discovered the mathematical relationships between the two.

3. More on Vedic Astronomy

We return to the Śatapatha Brāhmaṇa to provide us an overview of certain aspects of Vedic astronomy that are generally misunderstood. The sixth chapter (Kāṇḍa) of the book provides significant clues. Speaking of creation under the aegis of the Prajāpati (reference either to a star or to abstract time) mention is made of the emergence of Aśva, Rāsabha, Aja and Kūrma before the emergence of the earth. Clearly these refer to stars or constellations. Viśvanatha Vidyālaṅkāra (1985) argues that these should be identified as the sun (Aśva), Gemini (Rāsabha), Aja (Capricorn) and Kūrma (Cassiopeia). This identification is based on contemporaneous definitions as well as etymological considerations. RV 1.164.2 and Nirukta 4.4.27 define Aśva as the sun. Rāsabha which literally means the twin asses are defined in Nighaṇṭu 1.15 as Aśvinau which later usage suggests are Castor and Pollux in Gemini. In Western astronomy the twin asses are to be found in the next constellation of Cancer as Asellus Borealis and Asellus Australis. Aja (goat) is defined by Nighaṇṭu 1.15 as a sun and owing to the continuity that we see in the Vedic and later European names for constellations (as in the case of the Great Bear) it is reasonable to identify it as the constellation Capricorn (*caper* goat + *cornu* horn). Kūrma is a synonym of Kaśyapa (tortoise) which is linguistically close to Cassiopeia (from Greek *Kassiopeia*). Etymologically Kāśyapīya, slow like a tortoise, seems appropriate for Cassiopeia (from Greek *Kassiopeia*) since it is near the pole. This last name may point to an epoch when this constellation was even closer to the north pole. Other constellations mentioned in the Ṛgveda include the Ṛkṣas as (the Great

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Bear and the Little Bear), the two divine Dogs (Canis Major and Canis Minor), and the heavenly Boat (Argo Navis) (RV 1.24.10, 10.14.11, 10.63.10). AB 13.9 mentions the constellation of Mṛga or Deer (Orion) and the star Mṛgvyādha (Sirius). TS 4.4.10 and AV 19.7.2 give the names of the 28 nakṣatras along with the presiding deities.

SB 10.5.4.5 speaks of a total of 27 primary nakṣatras and 27 secondary nakṣatras. Together with the other references in the Ṛgveda, this suggests a comprehensive mapping of the constellations in the sky. The devas with chariots are the planets or the sun and the moon.

4. Planetary Periods

The references to the five planets in the Vedic literature (for example Shukla 1987) are commonly expressed in the mention of the thirty-four lights (RV 10.55.3) which are the twenty-seven nakṣatras , the sun, the moon, and the five planets. The five planets are apparently mentioned in RV 1.105.10 and *Brahaspati* (Jupiter) is referred in RV 4.50.4 and Vena (Venus) is mentioned in RV 10.123. It is possible that Venus may also have been known as *Śukra* (RV 3.32.2), as suggested by S B 4.2.1. The identification of *Vena* with Venus has been disputed but it appears to be supported by several independent references. The reference to the *sapta sūryāh* (seven suns), as in RV 1.105.5 and RV 8.72.16, seems to indicate the sun, the moon, and the five planets.

If we accept that the Rigvedic Indians had carefully observed the planets then it stands to reason that they must have determined their periods. But it is plausible that the knowledge was obtained only at the time of the arrangement of the hymns into the Ṛgveda. If this were true then the credit for this knowledge should go to Kṛṣṇa Dvaipāyana Vyāsa, who was the arranger according to tradition. Furthermore, in such a case references to the planets may not be found in the Ṛgveda hymns. On the other hand it has been suggested that the correct interpretation of the solar eclipse described in RV 5.40.5-9 is that Atri knew when the eclipse will be over. The fifth book is by Atri and his family and tradition considers him to be one of the teachers of astronomy (Sarma 1992). Tradition also considers Vyāsa as a great teacher of astronomy. It is likely that he was one in a long chain of astron-

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omer-seers.

If the periods of the five planets were known it is quite likely that they are contained in the Rigvedic astronomical code. The sidereal and synodic periods are given in days in Table 2.

Table 2: Sidereal and Synodic Periods in Days Planet

Planet	Sidereal Period	Synodic Period
Mercury	87.97	115.88
Venus	224.70	583.92
Mars	686.98	779.94
Jupiter	4332.59	398.88
Saturn	10759.20	378.09

We consider the sidereal periods first. We would expect that the three sidereal periods less than 1017 will be found amongst the combinations. But there is evidence that the approximation of 87 was used for the Mercury period. One reason for it may be that Mercury is very hard to observe. It appears that the synodic period of Mercury was taken to be one third of the year and that 87 is one third of the sky number 261 played some role in this choice. This latter reason would then stand for modifying observations to fit a theory. Although numerical considerations may have compelled the use of 87 as the period of Mercury we believe that this period was not computed to the same accuracy as others. The sidereal periods can be factored into the components given in Table 3.

Table 3: Sidereal Periods Factored

$87 = 87 \times 1$ (*Mercury*)
$225 = 58 + 75 + 92 = 75 \times 3$ (*Venus*)
$687 = 191 \times 3 + 114 \approx 43 \times 16$ (*Mars*)
$4332 \approx 62 \times 70 \approx 58 \times 75$ (*Jupiter*)
$10760 \approx 104 \times 104 \approx 92 \times 117$ (*Saturn*)

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Factors from each of these equations show up in the Book hymn numbers. It may be supposed that these factors were the starting points in the construction of the code. Similarly, factors of the year were used in the choice of the number of bricks in different layers of the agnicayana altar (Kak 1992). It is likely that the specific factors of the sidereal periods were chosen so that other astronomically significant numbers would be obtained. This is why the sidereal periods also show up as number of hymns in Book combinations.

Now consider the synodic periods. One may see that for Mercury, Venus, Mars, Jupiter, and Saturn 23, 5, 8, 9, and 29 synodic periods are completed in nearly 10, 8, 17, 10, and 30 years, respectively. One would expect a new cycle to begin every 2040 years. A different fit is provided by the synodic periods 3, 72, 15, 120, and 30 which would then be completed in 3, 115, 32, 130, and 31 years. The least common multiple of the synodic periods is now 1080. The emphasis on the number 108 that we saw in the altar construction of agnicayana (Kak 1993a) indicates that the second fit may have been the one used. This also indicates that the period of Mercury was not represented with the same accuracy as that of the other planets. References to yugas of large periods are to be encountered in the earliest Brāhmanas.

The 1023 combinations of the 10 hymn numbers map into 461 different numbers. While this is a large set, the fact that all the synodic periods, with the assumption that the period of Mercury is represented by 120 days, show up in this set within an error of one day is significant. A non-unique set is provided in Table 4.

Table 4: Synodic Periods in Days by Books

Books [3+4] = 120 (*Mercury*)
Books [1+5+9+10] = 583 (*Venus*)
Books [1+5+7+8+9+10] = 779 (*Mars*)
Books [2+3+5+8+9] = 398 (*Jupiter*)
Books [2+4+5+6+9] = 377 (*Saturn*)

Apart from these numbers we also obtain 118, 780 and 379 that provide even better approximations.

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Might the fame of the Rigvedic book arrangement have spread by the fact that it also gives the synodic periods in *tithis* especially since the use of the *tithi* (the lunar year divided into 360 parts) seems to have been commonly used in altar ritual (Kak 1993a)? But how can we be certain that the usage of *tithi* during the Rigvedic phase was similar to its later usage? The Vedāṅga Jyotiṣa takes a yuga of five years to be equal to 1,830 sidereal days or 62 synodic months or 1,860 *tithis*. Much later Varāhamihira takes the yuga to contain 1,830 civil days rather than sidereal days. It is clear that the measure of tithi could not have been determined by precise measurement but that it was used in relation with the year or several years to check the sun and the moon against the stars. It is because of this reason that it might have been used in more than one sense. Our usage is based on that of a lunar year divided into 360 parts so that a solar day is approximately 1.0159 *tithis*. This appears to be the earliest (AB 32.10) and the most commonly used definition of *tithi*.

To consider the parallel with the representation of the tropical year by 371 or 372 tithis although the correct value is close to 371.05 tithis one would expect that the tithis for each synodic period would be rounded to the next higher number if the fractional part is significant. The synodic periods in tithis are 117.72, 593.20, 792.34, 405.22, and 384.10 respectively. For Saturn one would expect both 384 and 385 to be used. In other words, the periods would be taken to be 118, 594, 793, 406 for Mercury, Venus, Mars, and Jupiter and 384 or 385 for Saturn. All of these numbers also show up in the combinations (Table 5).

5. Probabilistic Validation

To summarize there are several independent arguments that suggest that the planet period information went into the definition of the code. These include the fact that the hymn totals of the books are the factors of the sidereal periods of the planets and that the sums of these numbers yield the sidereal periods. Although the combinations are very many, it is important to note that the combinations of very few terms yield astronomically significant numbers. One would expect that the Rigvedic astronomers did not attempt all the combinations but checked if the numbers of significance did show up. The fact that this happened

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was proof to these astronomers that the code expressed significant relationships (*bandhu*) between diverse phenomena.

Support for this argument is obtained by considering all the combinations of the numbers of hymns in the Aṣṭaka division of the Ṛgveda. The number of unique combinations generated equals 179 (Table 6). These do not include any of the sidereal periods and only two of the five synodic periods in *tithis*, and the significant sun-step number of 339 is also not generated. In other words these combinations contain very few of the astronomically significant numbers that the combinations of the Book hymn numbers have yielded.

From a probabilistic point of view it is to be expected that the 179 Aṣṭaka numbers out of 1017 would give two fits out of randomly chosen ten numbers which is what we obtain. On the other hand the 451 Book (Maṇḍala) numbers should give correct choices only in half the cases. But we get the hymn numbers that are factors of the sidereal periods, and we get combinations for the three sidereal periods, five synodic periods in days as well as the five synodic periods in *tithis*.

Let the probability of picking a correct number be p. Considering a random model of choice, in a sample of n the expected number of correct picks is $\mu=np$ and the variance is $\sigma^2=np(1-p)$. A sample of twenty-three numbers, as in our case, implies that $\mu=11$ and $\sigma=2.39$. And that all the twenty three numbers are correct implies that we are five standard deviations away from the mean. The probability of that happening is 2.87×10^{-7}.

Now one might argue that only ten of the twenty three numbers must be considered to be primary and that the comparison should be based on the sample size being equal to ten. In this case $\mu=4.5$ and $\sigma=1.58$ so that the probability of obtaining ten significant random numbers in a sample of ten is 2.33×10^{-4}. These probabilities are so small that the claim that the Book numbers were deliberately chosen may be taken to be confirmed.

6. Concluding Remarks

Our analysis shows that the Rigvedic astronomers knew the planetary periods. It appears that the hymn numbers were chosen so as to reflect the periods as well as the constraints of the

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sun-steps during the equinox and the solstices. The fact that many other astronomical numbers were produced by the code must have contributed to the significance attached to the arrangement of the hymns made by Vyāsa.

Corroboration for the conclusion that the Vedic world knew the planetary periods may be sought in the artifacts and astronomical designs from the Harappan ruins, since that civilization is now increasingly viewed as being Vedic. It also becomes reasonable to reexamine the Vedic literature for further knowledge about the planet motions.

Abbreviations for the Vedic Texts:

AB, Aitreya Brāhmaṇa; AV, Atharvaveda
RV, Ṛgveda SB, Śatapatha Brāhmaṇa
TS, Taittirīya Saṃhitā

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Concerning Scientific Creativity: Hermann J. Muller and Germinal Repositories

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All life forms have acquired their present characteristics by descent from individuals who survived previous environmental hazards and successfully produced offspring. But if fitness to survive in a prevailing ecological niche leads, as it so often does, to extreme adaptation to a specific set of conditions this may itself lead to the extinction of the species in the event that the environment changes drastically and too rapidly to permit the further evolutionary adaptation necessitated by the new environment. Thus, while passive evolutionary adaptation to a myriad of environmental niches has created a rich biological kaleidoscope of diverse fauna and flora, evolution has also taken a second direction among the more advanced life forms, with mankind as the prime example of this latter class. This second class does not rely entirely upon passive adaptation to prevailing environmental circumstances; its members have developed complex nervous systems which enhance their survival chances by facilitating suitably varied responses to unexpected changes in the environment.

Among unicellular life forms, for example, phototropism is an elementary form of survival-oriented response to changes in the environment. Among higher life forms, and particularly birds and mammals, this variability to respond to environmental challenges has led to the development of what we call "intelligence." Psychologists have proposed various narrow definitions of intelligence – narrow because they are trying to define what it is that "intelligence tests" actually test. Generally, psychologists agree that intelligence involves the speed with which a living organism is able to effectively analyze data provided to it by its sensory organs. But to examine the concept of intelligence in a broader, evolutionary-related sense (while not contradicting the cautious definitions of psychologists) we may depict the evolutionary explanation for the

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appearance of intelligence in terms of the role that intelligence plays in facilitating survival among the more complex life forms that grace the world today.

Intelligence in an evolutionary context is the ability to analyze data about the surrounding environment, relate this to the past experience of the organism (and perhaps even of the species), and to promote reactive behavior which will promote the survival chances of the organism or its progeny, possibly also other members of its group. Intelligence is of particular utility in the case of mobile animals whose environment is likely to offer frequent and often sudden threats to survival. Most such animals have also evolved "built-in" reactions, such as alertness to unexpected noises or movements, but intelligence can lead them to react in far more sophisticated ways, including devising tools to assist in securing nourishment or protecting themselves and their offspring.[1]

Modern man in contemporary technologically-advanced societies, alone among all the forms of life currently known to exist in the universe, has become particularly dependent upon intelligence for survival. Proto-humans early specialized at the primate level in the use of intelligence to achieve survival above all other qualities (other than the need to develop resistance to disease common to all complex life forms). As a species, hominids have moved away from prime dependence upon physical adaptations such as powerful jaws and fangs, arboreal nimbleness, athletic ability, muscular and skeletal strength, etc., to ensure survival, even though we still prize physical abilities such as these in certain occupations and in our recreations, e.g. boxing, athletics and ball games. Physical prowess still gives us joy and pleasure, but what we depend upon increasingly for survival is our ability to problem-solve. Over a million or more years our ancestors evolved a more powerful brain, as evidenced by the palaeontological research. Probably with especial speed during the past fifty or so millennia, human intelligence advanced to reach its present varied levels. The peak may actually have been attained by some human populations as much as 35,000 years ago (e.g. the Cro-Magnons of Western

[1] Mankind must also rely on intelligence to avoid extinction in life-threatening ecological disasters, and even for the development of techniques to repair ecological damage already done.

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Eurasia), certainly by four or five thousand years ago (as, for example, in ancient Sumeria or ancient Greece), but the distribution of intelligence is still not uniform around the world today, either between races, or even within races. But it is important to remember that evolution is not a one-way street. Evolutionary advancement is not inevitable. *De*volution can occur within populations, and when it does, this is likely to lead to their ultimate extinction. No sub-species or species is guaranteed survival in the evolutionary sweepstake. Although our modern technology-based civilization depends on high intelligence and high creativity, there is no guarantee that our breeding trends and now culturally-influenced selective forces will ensure the survival of a sufficient number of highly intelligent and creative individuals into future populations to preserve, let alone advance, our present culture.

Eugenics

Eugenics is a modern ideal, developed only a hundred years or so ago, which has become a reality in modern medicine as medical science traces so many diseases, and the ability to resist diseases, to genetic factors. The predominantly genetic basis of intelligence is now widely accepted,[2] despite opposition from some who are dedicated to egalitarian values and who profess their belief in the absurd notion of the *biological* equality of individuals and races. Only identical twins can be biologically equal in their propensities.

To the extent that some societies have benefited from a high proportion of intelligent and creative individuals among their ancestors, advanced cultures have risen in different parts of the world at different times, and those of today have become totally dependent on high intelligence and technological sophistication. Thus, some of the inhabitants of our modern Western cities, whose forebears were quite capable of hunting animals, hoeing fields, picking crops and other simple levels of agrarian activity, now have difficulty in achieving subsistence because their intelligence level is inadequate for the demands of the technologically advanced

[2] See *The IQ Controversy: The Media and Public Policy* by Mark Snyderman and Stanley Roth, Transaction Books, 1988. Indeed, if intelligence were not primarily genetic, evolution could never have produced any form of intelligence.

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economy on which our society depends.

In consequence, many conscientious scholars have come to favor the introduction of some form of eugenic measure to ensure that future generations will be endowed with adequate intelligence and creativity to maintain, or possibly even advance, our present level of technologically-based subsistence. Some have argued that we need to devise ways and means of discouraging high rates of reproduction among those of *unduly low* intelligence. We have no argument with those who hold this position, provided only that it be achieved by painless and not degrading inducements and is not forcibly imposed. The renowned Professor William Shockley, Nobel prizewinner and co-inventor of the transistor, suggested as a thinking exercise that financial inducements might be offered to those of very low IQ, who were unable or barely able to look after themselves, to voluntarily choose to be sterilized so that they could indulge their desire for sex without burdening the rest of the population with the need to care for their offspring – who with statistical certainty would most likely be of similarly low intelligence.[3]

Then there are others, like Dr. William Andrews, a frequent contributor to this journal, who argue that we should seek humane ways of raising *the average* intelligence level of the entire population – including that of *all* the diverse ethnic groups within our multi-ethnic society, so that the disparities between the intelligence of the diverse ethnic groups should not be accentuated beyond the already embarrassing levels of inequality. This he sees as a necessity for the basic maintenance of civilization as it presently stands. We would not choose to argue with him either.

By contrast, however, we firmly believe that Mankind faces an even more serious need. As science and technology continue to advance, the level of intelligence needed to become a competent scientist and to maintain a technologically-sophisticated society is steadily rising. So also is the need for creative people – people of high intelligence who also have the ability to innovate. We must therefore be prepared to develop inducements to ensure that

[3] See *Shockley on Eugenics and Race*, (Ed., Roger Pearson) 1992, Washington D.C.: Scott-Townsend Publishers.

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future generations will continue to produce a high enough ratio of truly intelligent and truly creative individuals if posterity is to be able to continue the further march of science. And Mankind will surely need further scientific research to solve the problems of environmental deterioration that it has created, and to meet the other problems, including health threats, which are rapidly becoming more acute as a result of the ongoing population explosion originating in the Third World.

In short, we believe that greater consideration must be given not merely to the need to dissuade those of abnormally low intelligence from reproducing, and not merely to efforts to protect the overall level of human intelligence among the diverse ethnic groups and populations that make up Mankind, but to the need to ensure an adequate rate of reproduction among those who are especially gifted.

Creativity

True creativity is not evenly equated to intelligence. As Berkeley Professor Arthur R. Jensen has pointed out:

> ... one should never equate IQ with genius. Very few high-IQ persons ever become geniuses in the genuine sense of making contributions recognized by the intellectual, scientific, and artistic world as extraordinarily outstanding. Yet most of the world's geniuses come from the upper part of the IQ distribution, virtually without exception.
>
> Superior intelligence is a necessary but far from sufficient condition for extraordinary intellectual achievement. The concept of "genius" has no authentic meaning except in terms of achievement. Shakespeare's genius is in his plays. Beethoven's genius is in his symphonies.
>
> One often hears unfounded claims about "low" IQs of persons with extraordinary [intellectual, scientific or cultural] accomplishments... But the claims are sheer nonsense. Whenever such persons have been tested, they are never found to have low IQs; they almost never score average IQs; by far the most of them score above the top 1 or 2 percent of

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the general population.[4]

True creativity – bringing into being something which has not previously existed – is the attribute of Mankind in which we most resemble the Creator himself. If we do not fully understand this very special faculty, at least we can recognize it when it manifests itself. It will be useful to cite some examples of true scientific creativity and the ways in which it has greatly lengthened and enriched our lives.

Creativity and Science: The Contribution of Caucasoids and Mongoloids

Consider how much Mankind owes to truly creative people, to geniuses. Creativity gave us lenses of power. These were probably first produced by Meissner. With the lenses in Galileo's telescope the science of astronomy was born. This replaced the old concept of Earth as the center of the universe.

In recent times Caucasoid Westerners have transformed the world. They have freed Man from slow transportation by horse and sail by producing first the railroad, then the powered ship, and then the automobile, the airplane, and more recently space craft. They have provided an understanding of evolution (Darwin) and an understanding of genetics (Mendel; Watson). Westerners have developed health science, lowered the death rate, doubled life expectancy and trebled the population of the world. They have produced one of the most creative periods in human history.

For microscopes we owe thanks to Janssen. Later, under Van Leuwenhoek, they revealed the existence of germs. This began the science of bacteriology, leading to subsequent control of infections, including cholera, typhus, bubonic plague and yellow fever. To this conquest Pasteur contributed significantly. Jenner freed us from smallpox and founded immunology. With Fleming and his penicillin we began antibiotic control of bacterial disease. With Salk we began the conquest of polio.

For almost 500 years our society has replaced the conjectures

[4] Arthur R. Jensen, in *Straight Talk About Mental Tests*, 1981, New York: The Free Press. P.247.

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of the ancients with controlled experiments so as to determine reality. Francis Bacon inaugurated this scientific method.

We profit from Newton's understanding of gravity as a basic force in the universe. Einstein contributed significant refinement to this understanding, especially as applied to vast distances and enormous masses.

Gutenberg gave us movable type and the printing of books. Watt's steam engine began the industrial revolution. This development changed the face of our world more drastically than any other activity since the introduction of agriculture.

Benz gave us the automobile.

Marconi gave us radio. DeForest gave us triode tube electronics. Then Shockley's junction transistor powered the whole silicon valley development and its electronic marvels: computers, (v. Bush), television (Zworykin), radar (Watson-Watt).

Nuclear reaction — elemental transmutation — began with Rutherford and led to nuclear fission (Hahn) and to nuclear fusion (Cockcroft and Walton).

The Wright brothers originated heavier-than-air flight.

There were others: Faraday, inventor of the original electric generator; Henry, inventor of the electric motor; and Edison, inventor of the incandescent light.

Bell gave us the telephone; Lenoir gave us the internal combustion engine; Whittle the jet. Goddard and his rockets led to escape from earth's gravity and to interstellar flight. There are other examples by the hundreds: the bicycle, sewing machine, typewriter, portland cement and reinforced concrete, motion pictures, propellers, friction matches, the reaper, photography, vulcanized rubber, elevators, dynamite, X-rays. Each had its own identified creator.

One could continue in awe to list the multitude of technical accomplishments created by Western civilization. Indeed, science and its technology are the glory of our civilization.

No matter how incomplete this list or imperfect its attributions, as one studies this outpouring of scientific creativity a remarkable correlation appears: it is remarkable that every one of these creative individuals mentioned above is or was a Europoid Caucasoid. Although not exclusively linked to Europoids, throughout history, creativity has been primarily found among Caucasoids

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and, to a somewhat lesser extent, among those East Asians known broadly as Mongoloids. The capacity to create is a rare gift and unfortunately it is not universal.[5]

Because — in part at least — of outmigration and genetic admixture, creativity has not been exclusively linked to Europoids or Mongoloids. It is not solely a "Western" or East Asian phenomenon. But it has been almost exclusively linked to the Europoid and Mongoloid peoples or their migrant descendants. Some of the latter are itemized below. Though these comprise a respectable number, their total would appear to stand in striking contrast to the thousands of Europoid creators of Caucasoid civilization from the first appearance of the Upper Paleolithic culture of Europe — much of which was eventually transmitted across the Asian steppelands to be picked up and adapted by Mongoloids, with some reverse flow of East Eurasian invention to West Eurasia.[6] Even the culture of the intelligent Mongoloid Eskimos originated among the Cro-Magnons and their Europoid descendants in Western Eurasia during the Upper Paleolithic and Mesolithic periods.

The Mongoloid Chinese and Japanese civilizations are well known to have achieved high levels of technology and refinement. The Chinese invented gunpowder, printing, and a diverse variety of things including even the wheelbarrow. The Mongoloid Japanese are today showing us their technological ability to copy and then to innovate and improve. The Caucasoid West seems now be suffering from centuries of dysgenic behavior, in which the

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[5] In a number of areas, East Asian scientists have produced scientific innovations in technical areas initiated or enhanced by Caucasoids. For purely illustrative purposes, consider the following instances of Mongoloid creativity compared with concomitant Caucasoid contributors: Fermi - weak interaction theory, Yukawa - strong interaction theory; Kendall - cortisone, Li - ACTH, MSH and ribonuclease; Cronin and Fitch - CPT symmetry, Lee and Yang - refinement of parity; Hull - magnetrodes, Esaki - tunnel diodes; Wilson - cloud chamber, Fukui and Miyamoto - spark chamber.

[6] For a summary of the theory of early migration by the descendants of Cro-Magnon (early Caucasoids) into other lands, and thought-provoking ideas relating to the history of high intelligence among Caucasoids and Mongoloids and amongst other populations containing some degree of genetic admixture of these more highly intelligent races, see "The Upper Paleolithic Revolution" by David de Laubenfels, pp 61-83, in *Evolution, Creative Intelligence and Intergroup Competition* (Ed. Alan McGregor) 1986, Mankind Quarterly Monograph No. 3.

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leadership elements have been destroyed in bloody revolutions, overseas adventures and internecine wars (e.g. the French revolution, the Russian revolution, and the selectively dysgenic impact of World Wars 1 and II, probably unparalleled in the history of man for their disastrous genetic impact on the participant nations. Indeed, dysgenics and the concomitant decline of creativity in the West has recently become so pronounced that, what with disparate labor costs, political and financial mismanagement, with commercial espionage, and ideological confusion weakening the still predominantly Caucasoid West, the more purely Mongoloid of the East Asian countries are today rapidly overtaking the weakened (and increasingly hybridized) Caucasoid stock in many areas of creativity.

But as we have already observed, because of the former triumphant outward migration by the descendants of the Cro-Magnons, from the Mesolithic onwards, Middle Easterners and a high proportion of South Asians are either exclusively or primarily Caucasoid in their ancestry.[7] Classical Greek and Roman Europoid civilizations were clearly Caucasoid, direct descendants of the fabulously creative Cro-Magnon Caucasoids. But the ancient Mesopotamians were also Caucasoids, as seemingly were also the creators of the related Indus Valley civilization in the Indian subcontinent. The ancient Egyptians were initially Caucasoid Hamites; Caucasoid Asian Semites have through history contributed much to science and the arts; Caucasoid Semites were largely responsible for our Western alphabet; and Caucasoid Arab Semites produced the present numbering system, superior to that of the Romans. They invented the ship's rudder, replacing the steering oar. Caucasoid Aryans brought the rich Vedic literary and philosophical tradition into India, which was subsequently renowned for its mathematics and other achievements, including even the spinning wheel.[8] Through history there has be considerable

[7] Ibid.

[8] Recently, Caucasoid Indian scholars have made substantial contributions in various scientific areas. As with the East Asian Mongoloids, we can see how their achievements match up against those of Europoids by the following sample list: Fermi - Dirac statistics, Bose - Einstein statistics; Heisenberg - matrix mechanics, Raman - spectra; Nirenberg - genetic code contributions, Khorana - the same area; Glashow - electroweak

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genetic expansion from the temperate zones into the more tropical areas, with resultant admixture of *Homo sapiens sapiens* genes with those of the older stocks inhabiting those areas. But the highest levels of achievement and creativity seem always to have been linked with those populations, Caucasoid and Mongoloid, which evolved during the past fifty or more thousand years under severe selective pressures in the harsher environment of northern Eurasia, and retained their racial integrity by remaining close to those areas.

Tomorrow's Need for Creative Individuals

The science of genetics, unknown two centuries ago, has made major strides during the past half century. In another generation or two, eugenics (already being applied in medicine) will be far more perfect than it is today. But we know enough to assert that the really creative are likely to be the children of parents of high intelligence and parents who have themselves proved to be at least modestly creative. It follows that it would be good to have more highly creative peoples such as these so that they and their society may continue to progress into the future.

Yet when we consider Western society today, what do we find?

Since 1914 it has selectively pruned out those who were of proven ability, by warfare between nations (the high death rate among air crew, for example), and, in revolutions, by warfare between classes.

Even more sinister, at a time when the Third World population is exploding, the Caucasoid peoples are voluntarily committing autogenocide. Their birth rate averages 1.8 children per couple, when 2.1 children per couple are necessary just for replacement. Contrast this with Africa, for example, where women in general average six live births. Also, contrast this with conditions in Benjamin Franklin's time. Writing about the American colonists, Franklin commented that: "Our people must be at least doubled every 20 years." Now, at a time of Third World population

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interaction, Salam - the same; Weinberg; Schwarzschild - black holes, Chandrasekhar - the same; Feynman - quantum electrodynamics, Ramanujan - number theory.

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explosion, the West is not merely failing to replace itself, generation by generation, but its numbers have diminished to 15% of the total world population, and it is losing ground every year. What is more, its homelands, its racial breeding grounds, are being invaded in increasing numbers by the surplus population from the Third World, which is not only promoting hybridization but could in the course of time eventually swamp the declining population of indigenous Caucasoids.

What Can be Done?

As a result of scientific advances, we are fast reaching a stage where society — and civilization itself — will depend for its future on the continued supply of an increasing number of highly intelligent *and highly creative* people. The Caucasoid West seems to be already facing a decline in the prevalence of such people among its present generation. American universities are drawing heavily from the brighter Mongoloids and the more talented of the Indian Caucasoids of South Asia. But what happens if the supply also begins to run low through a failure there among the more intelligent and more creative peoples to breed as rapidly as the less capable? How can the West, or any peoples, produce more intelligent and creative-type individuals? Herman J. Muller, the Nobel Prize-winning geneticist from Texas University, recognized this problem, just as he recognized the problem of the spread of deleterious genes throughout modern populations as a result of modern man's changed breeding habits.[9] Others have since then also given their attention to this problem.

A more favorable attitude toward having children could be restored to educated, intelligent people in general. Today the media and entertainment industry both emphasize to literates the cost and encumbrance which the birth of children represents to parents. They too seldom mention that children enrich the parents' lives beyond all else. The printed media could stop discouraging the birth of future readers.

Higher education should be accomplished without interfering

[9] See Herman J. Muller, Out of the Night: A Biologist's View of the Future, (London: Victor Gollancz, 1936).

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with normal childbearing. Today, the best years for reproduction are often spent instead in higher education. As Mark Twain put it: "Education is not so sudden as a massacre, but is equally deadly in the long run." If a people would support its truly educable young couples well enough so that they could combine abundant childbearing with the simultaneous acquisition of higher learning, this would raise the genetic quality of the nation's posterity. No others could match it unless they were to do likewise.

But there is a project, which though minuscule today, serves as an example that needs to be emulated many times over. It has demonstrated what can be done. It is not just another proposal; it is a project that is working. It gives children the best possible start in life. If its principles were employed on a national, or even international, scale it could materially increase the number of potentially creative individuals for posterity.

This latter was the brainchild of the Nobel laureate Hermann J. Muller. Muller was no snob, but he valued quality. Once a Communist party member, he broke with Marxism when it condemned the science of genetics and, most particularly, eugenics. Seeing the danger to future generations of Man, if intelligence and especially creativity declined, Muller discerned a way voluntarily to increase the distribution of genes for high intelligence, creativity and other favorable qualities without impinging on the mores of our society.

There are many married couples of high intelligence and inherent ability, he perceived, where the wife is healthy and intelligent, but cannot give birth to offspring because of the infertility of her husband. If germinal repositories containing sperm from healthy, intelligent and creative males were available for their use, those couples who wished to have a child could ensure that the donated sperm would be of high quality. Such germinal repositories would make available to the parents all relevant facts about the health, physical qualities, achievements and intelligence of the donor male. They would be "repositories for germinal choice." Muller often rated his idea that such repositories should be established as being the most important that he had offered Mankind in the entire course of his life. He ranked it as more significant than the research on mutations for which he received his Nobel prize. Repositories can turn the current increase

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in male infertility into an opportunity for the betterment of posterity.

The Repository for Germinal Choice in Escondido

The first repository for the propagation of intelligence and creativity began to function in 1980. To date it has engendered 187 infants (and 19 more are on the way). All are remarkably bright, healthy and happy youngsters. Their vocabularies are large, in some instances more than twice the expected. All who have been examined are above average in development and some are at least gifted. It remains to be seen how many will be significantly creative adults, but biographical research has found that notably creative persons have typically shown a constellation of traits when they were children that now are appearing in a number of children who have resulted from the repository. The Repository serves as a pioneering example of what can be accomplished by constructive concern for the genetic component of offspring. It is best understood from the viewpoint of the recipients of the repository's services.

Recipients are married couples who want children but cannot have them because of the infertility of the husband. The Repository can supply under liquid nitrogen the germinal material which enables the wife to become a mother. The couple are provided with detailed information about a number of germinal donors and may choose from this the one they would prefer as the biological father of their child (hence the term: germinal choice). Since the offspring will spend a lifetime profoundly influenced by the genes of the donor (as well as those of the mother), the repository undertakes to supply genes from the most intellectually creative and productive donors to be found. It goes to Nobelists and younger healthy, creative men who, though unpaid, are willing to increase the distribution of genes which helped to make them outstanding. Some of these are men whose accomplishments are widely recognized. Some have resolved problems which were previously unresolved. The world can have more creative human assets such as these. The system enables the mothers to have the most intellectually promising children possible for them. With bright mothers and genius fathers the probability of bright, healthy and creative children is maximized. Even if none of these children

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turn out to be significantly creative, they still will enrich the human gene pool through a wider distribution of genes for high intelligence and creativity than would have taken place otherwise.

More than 100 of the repository children are the offspring of leading scientists. These are in addition to the scientists' own families. Without the Repository, these fortunate children would not have been born, and the outlook for the future prospects of Mankind would be even poorer than it is now.

Conclusion

If there were hundreds of repositories, at least one in each city of size, this could result in thousands more of bright, useful citizens, some of them potentially creative.

In this century, the new science of genetics has powerfully reinforced man's ability to transcend himself and thus to reach new heights of competence. For the first time a living species has both the understanding and the ability to improve itself. Man may increase his competence until he manages himself and his globe far more wisely than today. Amid the justified concern about diminishing natural resources, he can increase his ultimate and most inexhaustible resource: human intelligence. And high intelligence, when specially empowered by a deeply-felt need or a penetrating curiosity, sometimes results in that rare and wonderful flowering which we call human creativity.

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BOOK REVIEWS

Race in Ancient Egypt and the Old Testament
A.A. Sayce and Alan McGregor
Scott Townsend Publishers, Washington D.C., *Illustrated.* (1993)

This remarkable book is based on a text by the late A.A. Sayce, who compared Egyptian and Assyrian portraits of the diverse peoples mentioned in the Old Testament and published an exciting study of the racial types represented by the many different people who inhabited the Middle East and North Africa in biblical times. His study, which is not outdated as to its sources, all of which are historical, has been updated by Alan McGregor in light of progress in anthropological and archaeological investigation, and is now reproduced as a text based on the combined research of the two scholars. It is particularly interesting for its selection of early portraits and stone bas-reliefs which reveal the characteristic features of the different peoples known to the Egyptians.

The Egyptians were especially renowned for their distinctive portrayal of the facial features, the skin, eye and hair color and the costume of their many different neighbors. Libyans and other north African peoples from the nations to their West are portrayed, Negroes, Cushites and Nubians from their south, Asians from their troublesome eastern borders, including Philistines, Phoenicians, Hittites and Semites of many different types, and even those people of the Sea who are now believed to be of Cretan and European origin.

Anyone who has seen Ancient Egyptian wall paintings showing Negro slaves being transported down the Nile by their Egyptian guards will realize immediately the vast reversal of the truth on which contemporary popular claims that the Egyptian civilization was African and, ergo, Negroid involve. Similarly the evidence from Egyptian portraiture is clear that a vast variety of peoples and races milled around in the area generally identified as the Levant and Asia Minor. Although Egypt itself was largely protected by desert barriers, the fertile Palestinian and Syrian

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territories were a constant invitation for invaders from less fertile lands, and its history is that of constant warfare to seize, and having seized, to hold on to, *lebensraum*.

In truth, the history of ancient Canaan and of the Old Testament cannot be understood except in terms of genocide and racial hatred – the very basis of Darwin's evolutionary struggle, "red in tooth and claw." Ancient Egyptian and Assyrian portraits from that age show Canaan as a region full of warring peoples, portraying the victors sacking walled cities, cutting off the hands of captives and sometimes even impaling the bodies of the vanquished on spikes. Interspersed with ennobling moral codes advocating filial respect to parents and ancestors and loyalty to the tribe (honor thy "neighbor," the neighbor being no more than a fellow tribesman), the Old Testament recounts a harrowing story of greed, bloodshed, hatred and cruelty. Indeed, it presents all this as the will of Jahweh – the Lord of History – in much the same way as the Will of Allah was later represented in that other Semitic religious book, the Koran.

What is remarkable is the extent to which Professor Sayce's original work is still valid. McGregor has edited and updated Sayce's extensive manuscript in the light of the substantial accretions to knowledge provided by subsequent discoveries and improvements in research techniques; and the result is a fascinating survey. The fact that Sayce depended to a large extent on traditional anthropometric evidence does not invalidate the conclusions reached in his earlier paper. There is nothing misleading about anthropometric classification: it is still used by forensic anthropologists to identify the racial identity of cadavers. Undeniably, morphological research has since provided powerful new techniques for human (and animal) phylogenetic classification not available in Sayce's day – due to continuing progress in blood grouping, dermatoglyphics, and DNA classification – but little that is being revealed by these new methods contradicts the conclusions as to race classification provided by traditional anthropomorphic measurements and data relating to skin, eye and hair coloring and texture, such as is conveyed with seeming accuracy in Egyptian portraiture. Only in a few stylized distortions, such as the shape of the eye, does Egyptian racial portraiture appear to be blurred by artistic convention. Unfortunately, Assyrian portraiture was more

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heavily stylized, and does not trace physiological distinctions with the same accuracy.

A Nation of Victims:
The Decay of American Character
By Charles J. Sykes
St. Martins Press, 1992

The first third or so of this book identifies a very prominent contemporary trend in the United States. In emphasizing minority and individual "rights," the U.S. has in recent decades promoted individualism at the expense of that morality which binds individuals who see each other as sharing a common heritage and a common duty as part of a common family. As a result the sense of "duty" has suffered. The strength of character that used to mark the United States when it comprised a nation proud of its European origins and cultural traditions (with a few, subordinate, minority elements) has disappeared. Instead, the "Old American" white population who felt an imperative sense of national pride has been replaced, if we read the author correctly, by what is little more than a mass of guilt-ridden deracinated individuals, each jealously guarding his or her own "rights" against *victimization* by those they see only as "others." An increasing number of "minorities" (moving toward becoming a majority) also claim victimization and deprivation at the hands of the "Old Americans," with increasing frequency in a consciously organized and exploitive manner. America is no longer a nation, and consequently no longer has a soul. That, at least, is what one reads in these pages, even though the author does not express these ideas so explicitly.

The analytical content of *A Nation of Victims*, as contrasted with its impressive array of facts and examples, stands on weaker ground. On several occasions the author, who avoids a straightforward sociological or anthropological approach, mentions the "freewill" versus "deterministic" conflict, coming down, by inference, on the side of those who base their concept of morality on their belief in "freewill." This, the present reviewer feels, can be a misleading approach, since there is no reason for scientists or anyone else to hypothecate "freewill." Indeed, medical and genetic

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research increasingly demonstrates that human behavior, including even "conscience," and "altruism," is controlled by physico-chemical processes, and that there is no evidence that any biological organism, including man, is free from the laws of causality: criminal behavior is due to both heredity and moral environment.

A belief in freewill complicates the workings of the criminal justice system. It becomes necessary to prove that somone "willingly" contravened the law, that they chose to do so "while of sane mind." The idea of "freewill" raises questions about "intention" and "temporary insanity," which are financially rewarding for lawyers, but make the criminal justice system extremely costly and inefficient. In ancient Greek and early Germanic thought, by contrast, the law was the law and if a man broke it he was guilty, regardless of questions of intentionality. Based on the idea that behavior was causally determined by inheritance and by upbringing, if a man was what we would call a "sociopath," a serious danger to society, then he was to be expelled from the community, or even executed for extremely serious crimes. For lesser offenses he was fined. These were simple solutions for a simple level of social complexity: but they were solutions which did not seek to examine the "inentions" for the law-breaker, or raise arguments about "temporary insanity." The only decision facing juries was whether the offense had indeed occurred, and whether the accused committed it. The question of "state of mind at the time of the crime" (was the offender able to *choose* between right and wrong"?) did not arise.

Today, behavioral genetics emphasizes the two factors our forebears knew to be important, good genes and good upbringing. As far as the "upbringing" or environmental aspects are concerned, the members of a nation are only likely to be constrained by a sense of morality if they have been raised in a moral atmosphere, and if they care for each other virtually as strongly as they care for themselves. When no feeling of a common national bond exists, the only possible outcome is a near-universalistic feeling of "what's in it for me?" and "why are my rights being trampled on and why am I being 'victimized'? That is not the kind of society that can be regarded as a human success story.

The Mankind Quarterly

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Index to Volume XXXIII

Andrews, William P.
Facing the Malthusian Threat: Some Implications of the World Population Explosion 121
Bowden, Edgar
Greek Alliterative Metrics and the Writing System of the Phaistos Disc 321
Chiarelli, Brunetto
The Use of Family Names in the Study of Human Migration During the Last Two Centuries 69
Collins, Alfred
"For Purusa's Sake": Psychoanalytic Self-Psychology and the Metaphysics of Selfhood in Indian Thought: Parts II and III 171
Eisenman, Russell
The Assignment of Black Children to Special Education Classes 227
Helmig, Thomas
Anglo-Saxon Kin-Class Structure 155
Irsigler, F. J.
A Nongenetic Approach to Language and Language Origins 243
The Role of Cognition in Evolutionary Theory 371
Itzkoff, Seymour W.
Orthoselection and the Corticalization of Social Behavior 263
Jacob, Alexander
Freud and Jung: The Implications of Psychological Theory 379
Jamieson, J. W.
Concerning Scientific Creativity: Herman J. Muller and Germinal Repositories 443

Volume XXXIII, Number 4, Summer, 1993

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Kak, Subhash C.
The Astronomy of the Vedic Altars and the Rigveda 43
Planetary Periods from the Rigvedic Code 433
Kak, Subhash C. and David Frawley
Further Observations on the Rigvedic Code 163
Lamb, Kevin
Biased Tidings: The Media and the Cyril Burt Controversy 203
Lowis, Michael J and John M. Nieuwoudt
The Humor Phenomonon: A Theoretical Perspective 409
Mallory, J. P.
Human Populations and the Indo-European Problem 131
McGregor, Alan
The Double Nature of Prejudice 423
Nocentini, Alberto
Power and Limits of the Genetic Classification of Languages 265
Pearson, Roger
Eighteenth Century Calcutta: Birthplace of Indo-European Studies 97
Phelps, Maria T.
An Examination of Lynn's Evolutionary Account of Racial Differences in Intelligence
Poruciuc, Adrian
Problems and Patterns of the SE European Ethno- and Glotto-genesis (ca 6500 BC - AD 1500) 3
Scott, Ralph,
Racial Quotas in Public School Classrooms 309
Tagábyi, Zoltán
Eastern Europe Confronts Sociobiology: East European Reaction to Contemporary Western Social Science 109
Wang, Penglin
Explanations in the Contact Between Altaic and Tokharian 79

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THE DOLPHIN AND THE WOLF
THE WOLF AND DEATH
WEREWOLF-CONFRATERNITIES AND WIND EVIDENCE
EPILOGUE
THE STOIC EXPLANATION OF THE EPITHET LYKEIOS
THE TRIAL OF OLD THIES, 1691
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INDEXES

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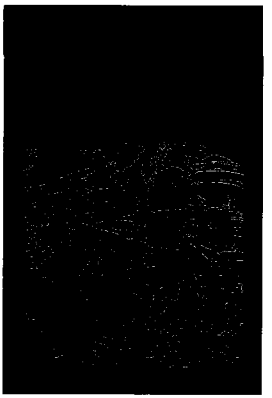

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